USER MANUAL

61301603708 Rev. A

SERIES 2200
TUNNEL, CAGE, AND UTENSIL WASHERS

USER MANUAL

MTP®

SERIES 2200

TUNNEL, CAGE, AND

UTENSIL WASHER

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GETINGE Castle

USER MANUAL 61301603708

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Related Publications:

Service Data Manual 61301603707

Customer Manual—keyed to the customer's specific serial number

DESCRIPTION OF SYMBOLS & NOTES IN MANUAL

The following symbols with related notes appear in this manual.

"Warning" notes alert the user to the possibility of personal injury.

"Caution" notes alert the user to the possibility of damage to the equipment.

"Notes" alert the user to pertinent facts and conditions.

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SPECIAL SAFETY INSTRUCTIONS

THE FOLLOWING SAFETY INSTRUCTIONS APPEAR WITHIN THIS MANUAL. READ THEM CAREFULLY BEFORE OPERATING THE UNIT.

"Warning" notes alert the user to the possibility of personal injury.

Warnings Summary **p. xi**

BURN HAZARD:This washer operates at extremely high temperatures. Prior to any machine maintenance or service, the washer should be allowed sufficient time to cool. Caution should be used in and around the washer chamber and external piping. Water flow and discharge piping can cause personal injury such as burns. Operators should partially open the chamber door to allow hot air to exhaust and to allow all loads adequate time to cool. Opening the chamber door fully may cause large amounts of steam to escape.

SHOCK HAZARD: Prior to any service or maintenance on the washer, all utilities should be disconnected and the lockout/tagout procedures should be followed to insure safety and prevent accidental shock.

PERSONAL HAZARD AND EQUIPMENT DAMAGE: Safe and efficient operation of this equipment requires scheduled preventative maintenance. Routine adjustments and replacement of parts by other than qualified maintenance personnel may cause personal injury or the equipment to perform less than its capabilities.

General Machine Operation **p. 3-1**

BURN HAZARD: Do not open station access doors during a cycle. This could release hot water through the door opening, resulting in burns to personnel.

Daily Checklist **p. 3-3**

HOT SURFACES: The area surrounding the load and unload end of the washer could be hot. Use caution when loading or unloading ware.

Routine Operation: Detail **p. 3-6**

BURN HAZARD: Do not open a Washer door during a cycle. This could release hot water through the door opening, resulting in burns to personnel.

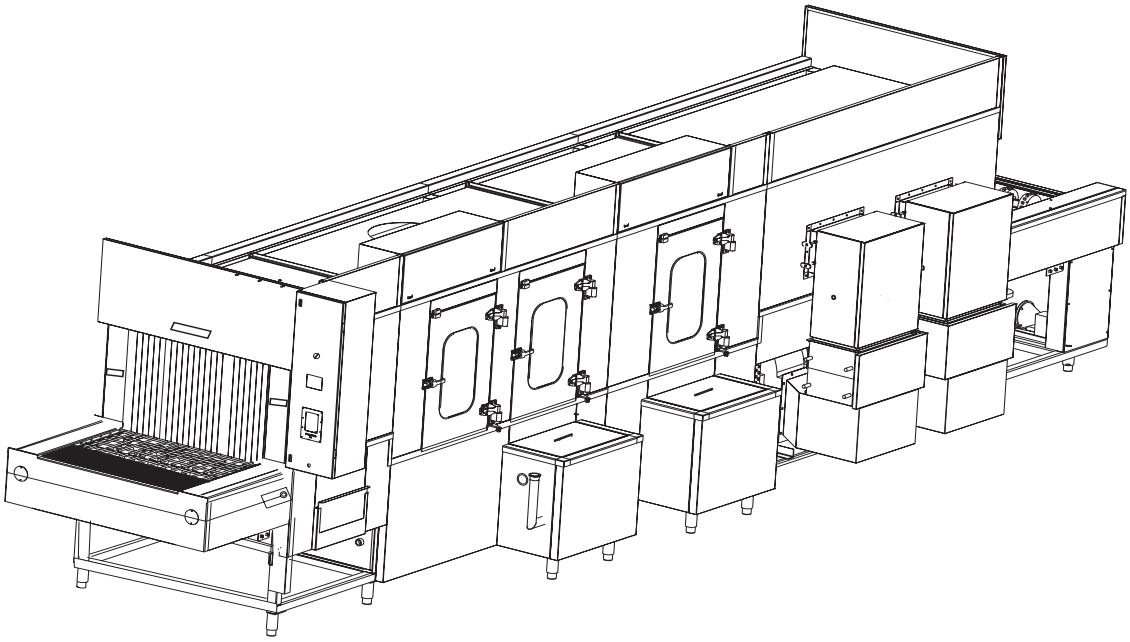
Routine Maintenance Schedule - Standard, Every Six Months **p 4-4**

ELECTRIC SHOCK HAZARD: Only an electrician should perform this test!

Section 1 General Description

INTRODUCTION

Figure 1–1. MTP 2200 SERIES WASHERS



MTP 2200 series units are automatic, heavy duty, tunnel-type hydrospray washers with conveyors. They are designed for continuous high volume processing. These units are designed to clean, sanitize, and dry— efficiently and thoroughly —metal or plastic cages, racked watering bottles, and utensils used in research animal care facilities.

Units may be recessed through one or two walls or installed free standing. Left side service access and control terminal location is standard with right side service access and control terminal location optional.

Models and dimensions are listed in Table 1–1.

Table 1–1. MTP 2200 series washers

MODEL	CHAMBER (in. [cm])	OVERALL (in. [cm])
2224	25x25 [64x64]	65½x85 [145x213]
2230	31x25 [79x64]	71½x85 [160x213]
2236	37x25 [94x64]	77½x85 [175x213]
2242	43x25 [107x64]	83½x85 [212x213]
2248	48x25 [122x64]	89½x85 [227x213]

Routine operation consists of manually placing the items to be cleaned upside down on the conveyor belt at the load end of the unit. The items are conveyed automatically through the process treatments and discharged at the unload end for removal.

Treatment solutions are delivered by means of stationary manifolds equipped with jet spray nozzles. These manifolds are located above and below the conveyor at each station (except dry).

Processing cycles are controlled by means of a Programmable Logic Controller (PLC) equipped with a touch screen interface or LED Control Panel. Twelve cycle selections are possible. The user selects and starts an appropriate cycle.

A standard cycle has these phases: Prewash, Agent Wash, Recirculated Rinse, Final Rinse, and Recirculated Air Dry. The cycle, once activated, is completely automatic.

Standard Features

- Microcomputer Color Touch Screen Control
- Twelve User-Programmable Cycles
- Personnel Safety System
- Wash and Rinse Temperature Assurance
- 180°F Non-recirculated Final Rinse
- Water Conservation System
- Removable Spray Headers
- Hydraulic Hold Down System
- 7.5 HP Wash Pump (10HP on Models 2230 & 2236)
- 3 HP Recirculated Rinse Pump
- Basket and Drawer Type Debris Screens
- Agent Injection Ports and Contacts
- Stainless Steel Steam Coil Heating
- Stainless Steel Flat Wire Conveyor Belt
- All Stainless Steel Construction

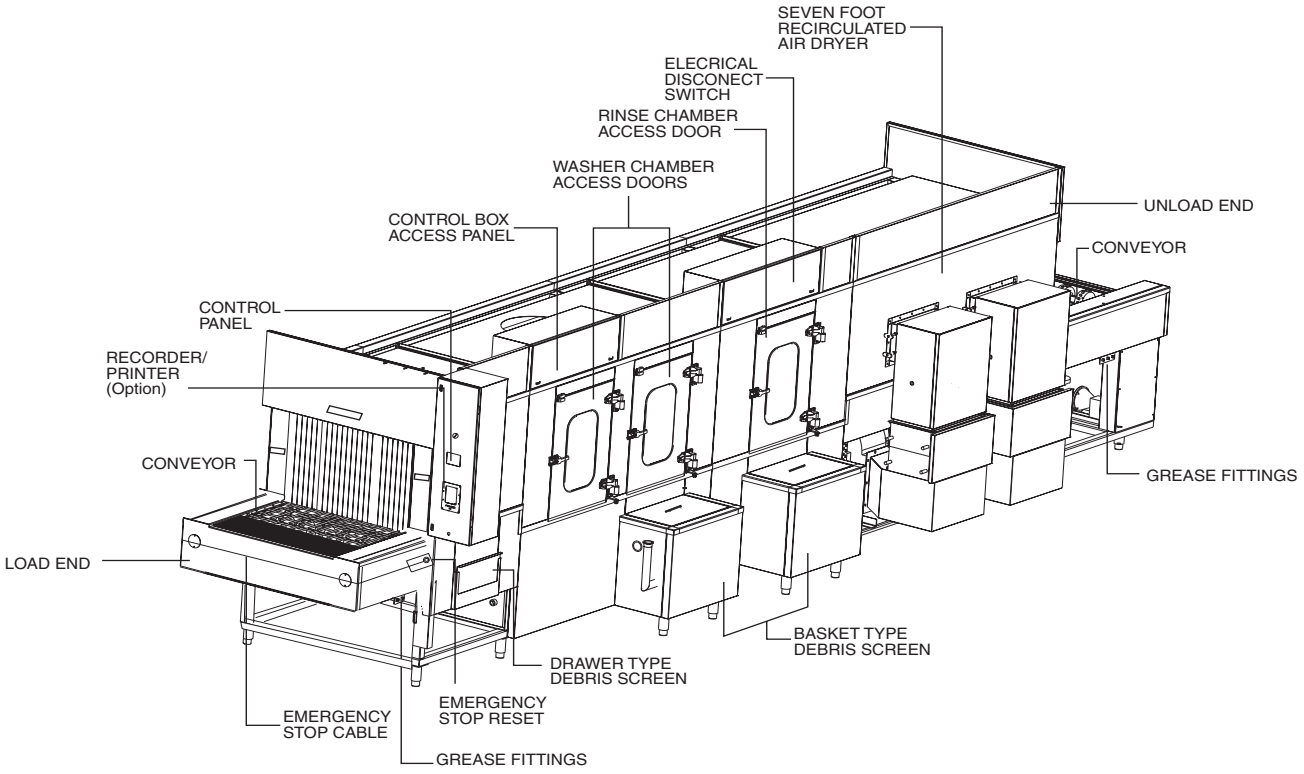
- Side Hinged Chamber Access Doors
- Exhaust Plenum with Single Point Connection
- Insulated Chamber Construction
- Left Service Side Installation
- Program Access Code Security

Optional Features

- Strip Chart Printer
- RS232 or RS485 Port for Data Download
- Right Service Side Installation
- Stainless Steel Treatment Components
- Automatic Self-Cleaning Debris Filter
- Automatic Fill and Drain with Interior Tank Cleaning
- Non-Recirculated Final Pure Water Rinse
- Water Supply Temperature Booster
- Automatic Agent Injection Systems
- Acid Wash Tunnel Section
- Six, Seven, or Ten Foot Recirculated Dryer Section
- Four, Six, or Eight Foot Unload Conveyor
- Automatic Conveyor Stop
- Power Exhaust Fan
- Vapor Removal Condenser
- Drain Discharge Cool Down System
- Treatment Solution pH Neutralization
- High Altitude Inducers
- Barrier Wall Recessing System
- Remote Control Terminal Location
- Seismic Design
- Knocked Down Shipment

EXTERNAL COMPONENTS

Figure 1–2. EXTERNAL COMPONENTS



Control Panel

Provides a touch screen interface with the Programmable Logic Controller (PLC) located in the control box. Enables the user to select, program, and monitor processing cycles.

Emergency Stop Cable

An emergency stop cable is provided at both the load and unload ends of the unit to terminate all process and conveyance functions. Processing is resumed by resetting the emergency stop cable and pressing the cycle start button.

Each chamber access door is equipped with a disconnect switch to terminate all processing and conveyance functions upon opening of any door. Processing cannot be resumed unless all doors are fully closed.

Alarm (not shown)

Sounds an audible alert:

- when the emergency stop cable is pulled
- when a chamber access door is opened.

Conveyor

A stainless steel, flat wire conveyor runs the full length of the processing chamber carrying soiled ware through the unit's treatment stations. Sprockets at both the load and unload ends provide positive belt tracking. Belt tension and speed are adjustable.

Wash Chamber Access Doors

Removable, side hinged splash proof doors provide easy access to unit Wash Chamber

Rinse Chamber Access Door

Removable, side hinged splash proof door provides easy access to unit Rinse and Final Rinse Chambers.

Final Rinse Heat Exchanger

Ensures that a minimum 180^{o}F final rinse temperature is attained and maintained. Should the final rinse temperature assurance set point not be attained or maintained the variances are annunciated to the user.

Drawer and Basket-Type Debris Filters

The pre-wash, agent wash, and recirculated rinse treatments are filtered through drawer or basket-type stainless steel screens to prevent plugged spray jets. The screens are easily accessible for cleaning.

Agent Injection Ports (not shown)

Three agent injection ports and dry electrical contacts are provided for installation of automatic agent injection systems.

Exhaust Plenum (not shown)

A stainless steel exhaust plenum is provided for exhausting the washer and dryer through a single point connection. Each machine vent is provided with its own individual manual damper.

Six-Foot Recirculated Air Dryer (not shown)

An insulated stainless steel six-foot long dryer section to recirculate hot air to dry the load is provided. The system consists of a steam to air heat exchanger, a single 5 HP blower capable of providing a 1600 CFM air flow and a stainless steel plenum system. Moisture is eliminated by exhausting a portion of the recirculated air to the facility exhaust system. Plastic cages are delivered at the unload end 95% dry. All air ducting is stainless steel and includes required manual dampers.

Seven-Foot 99% Plastic Cage Dryer

An insulated stainless steel seven-foot long dryer section to recirculate hot air to dry the load is provided. The system consists of a steam-to-air heat exchanger, a dual 5 HP blower capable of providing a 3200 CFM air flow and a stainless steel plenum system. Moisture is eliminated by exhausting a portion of the recirculated air to the facility exhaust system. The conveyor belt is separated from the wash compartment to remove the excess water remaining on the plastic cages exiting the recirculated air dyer. This system delivers the plastic cages 99% dry at the discharge of the dryer, permitting filling of the cage immediately.

Ten-Foot Recirculated Air Dryer (not shown)

An insulated stainless steel ten-foot long dryer section to recirculate hot air to dry the load is provided. The system consists of a steam to air heat exchanger, a dual 5 HP blower capable of providing a 3200 CFM air flow and a stainless steel plenum system. Moisture is eliminated by exhausting a portion of the recirculated air to the facility exhaust system. Plastic cages are delivered at the unload end 95% dry. All air ducting is stainless steel and includes required manual dampers.

Unload Roller Conveyor

A stainless steel, roller type, gravity conveyor is at the output end of the unit to facilitate unloading.

Control Box Access Panel

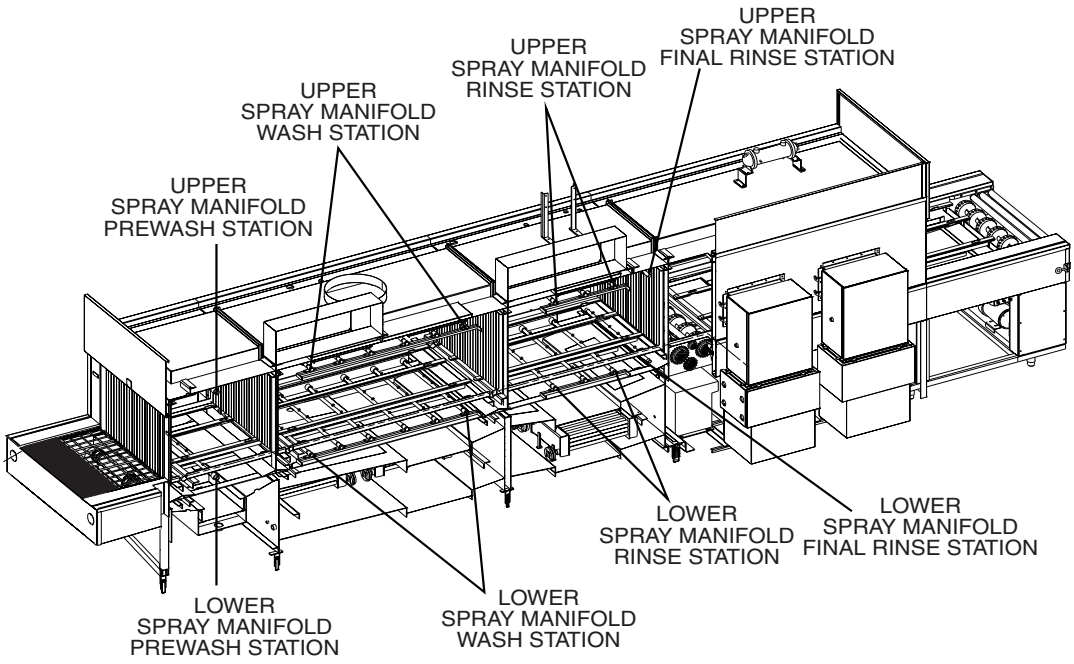
Permits access to the unit's control box located above Washer Chamber door. Box contains the programmable controller, fuses, contactors, relays, etc., and other essential components of the unit's electrical system. (Access restricted to qualified personnel only).

Electrical Disconnect Switch

An UL/CSA approved, non-fusible 3 pole, electrical disconnect switch is provided in the primary control box to provide additional protection to the facilities personnel. The disconnect switch incorporates a handle mechanism mounted through the control box front access panel and is sealed to a NEMA 4X water tight rating. The handle must be turned to the "OFF" position, disconnecting the incoming electrical service prior to accessing the internal control box components.

INTERNAL COMPONENTS

Figure 1–3. INTERNAL COMPONENTS



Upper Spray Manifold

A stationary, single manifold that delivers the jet spray and treatment agent down on to soiled ware as it is conveyed through each station. These manifolds are located in the following stations:

- Prewash
- Wash
- Rinse
- Final Rise

Lower Spray Manifold

A stationary, single manifold that delivers the jet spray and treatment agent up into soiled ware that is conveyed through each station. These manifolds are located in the following stations:

- Prewash
- Wash
- Rinse
- Final Rise

Hydraulic Hold Down (not shown)

Jet spray header throttle valves are properly sized and positioned to hydraulically hold down light plastic cage and steel pans to the conveyor. By setting the throttle valve to restrict flow to the lower header, the pressure differential will allow a higher volume of water to push down on caging.

Wash, Rinse, and Final Rinse Treatment Temperature Guarantees (not shown)

An agent wash, recirculated rinse, or final rinse temperature guarantee may be programmed to ensure that minimum treatment temperatures are attained and maintained. Should the temperature guarantee set points not be attained or maintained, the conveyer belt will temporarily stop until the treatment solution reaches the set point temperature. The controls signal the user if there are any variances.

Water Conservation (not shown)

The hot tap final rinse water is sprayed through the jet system and collected in the recirculated rinse tank. The water is used for the recirculated wash, rinse and pre-wash for water and energy conservation.

MOST COMMON OPTIONS

Stainless Steel Treatment Components

All components including valves, pump, and piping that come in contact with the recirculating treatment solution are 304 stainless steel to provide system life and durability

House Tap Water Temperature Booster

An instantaneous steam to water heat exchanger is provided to raise the house tap water supply temperature.

Steam and Water Pressure Gauges

Pressure gauges are provided on the incoming steam and water lines to monitor the facility utilities.

Automatic Self Cleaning Debris Filter

The output of the wash pump is provided with a self cleaning debris screen having perforations smaller than the spray jets' orifices to prevent plugged jets. The debris filter is automatically controlled to filter the recirculated was solution and to periodically back flush debris to the drain. The screen element may be accessed without the use of tools.

Automatic Drain System

Provides the capability to automatically drain the agent wash and recirculated rinse tanks at the end of the processing period.

Drain Discharge Cool Down Injection System

Cold tap water is automatically injected into the drain discharge to lower the discharge temperature before entering into the building's drain system.

Washer Interior Cleaning and Descaling System

Provided in the interior of each tank are jets to wash the walls of the tank to remove debris build up. When activated the control system automatically drains the wash tank, refills the tank with fresh water and a descaling agent, and activates the belt and pumps for a user programmable period of time, automatically draining and flushing each tank. This system reduces or eliminates the need to clean the tanks manually.

Automatic Conveyor Stop

A photoelectric switch is located at the end of the discharge conveyor to automatically stop the conveyor drive when an item reaches the end of the conveyor. A second photo eye may be located at the end of a bedding dispenser, if equipped, user may program cycle to stop at end of washer or dispenser. A stopped conveyor condition is visually annunciated to the user on the control screen.

Recorder/Printer

Issues a printed record of all pertinent cycle data, including treatment functions, temperature, time and date. A Take-Up Reel is provided to retrieve and rewind the print-out onto a spool. See also: Appendix A: Recorder/Printer.

GENERAL MACHINE DESCRIPTION

At the start of the processing period, the user activates the unit for automatic operation by turning on the main disconnect switch. The unit automatically goes through a self diagnostic test then fills with fresh water and heats to programmed temperature.

The user at this time can press the start prompt and place the load to be cleaned on the stainless steel flat wire. The unit will automatically proceed through the treatment process and deliver the items at the unload end of the machine.

Automatic Treatment Cycle

The standard treatment cycle consists of a pre-wash, an agent wash, a recirculated rinse, final rinse, and recirculated air dry. All wash and rinse treatments are recirculated under pump pressure. The cycle, once activated, is completely automatic. Additional cycle treatment phases are available.

Treatment Schedule

PRE-WASH

Hot water from the recirculated rinse tank is directed through the upper and lower jet spray headers under pump pressure to remove gross debris. This solution is not recirculated and is sent to drain.

AGENT WASH

Hot chemical solution, from the wash tank, is recirculated through the wash jet spray headers under pump pressure and retained in the wash tank. Wash temperature is progammable up to 190ºF.

RECIRCULATED RINSE

Hot water from the rinse tank, is recirculated through the rinse jet spray headers (top to bottom) under pump pressure and retained in the rinse tank. Rinse temperature is programmable up to 190ºF.

NON-RECIRCULATED FINAL RINSE

Hot tap water from house supply is heated by a steam heat exchanger and directed through separate final rinse jet spray headers under house supply pressure and retained in the rinse tank for the recirculated rinse and pre-wash. Final rinse temperature is manually adjustable to 195ºF.

RECIRCULATED AIR DRY (Optional)

Hot air is recirculated through a finned steam coil and directed through flat air knives. The dryer temperature is manually adjustable. Moisture is eliminated by exhausting a portion of the recirculated air to the facility exhaust system.

Temperature Guarantee System

When selected, this will cause the unit to fill and spray water normally for that phase. If at any time the tank temperature should fall below setpoint, the conveyor belt will stop until the temperature exceeds setpoint. Failure to do so in a set period of time will generate a “too long to heat” alarm.

- *Operation (conveyor/recirculation) pauses if:*
  1) the wash or rinse water temperature setpoints not be met, or
  2) the contents of a wash or rinse tank drop below its low level limit.
  Otherwise, the unit runs until stopped by operating personnel.
- *Water supplies held in Wash and Rinse Tanks are re-used until drained at the end of the day (or as required—a determination made by operating personnel).*

Section 2 The Control Panel

INTRODUCTION

Your unit has one of the following control panels:

- TOUCH CONTROL PANEL (TCP), see page 2–2
- LED CONTROLLER, see page 2–12
- ELECTRO-MECHANICAL CONTROLS, see page 2–27

The control panel provides an interface linked to the Programmable Logic Controller (PLC) in the control box.

Using the control panel, the user can:

- Program treatment temperatures.
- Select treatments.
- Start the unit.
- Monitor the status of unit operation.
- Drain the unit's wash and rinse water tanks.
- Control conveyor operation.

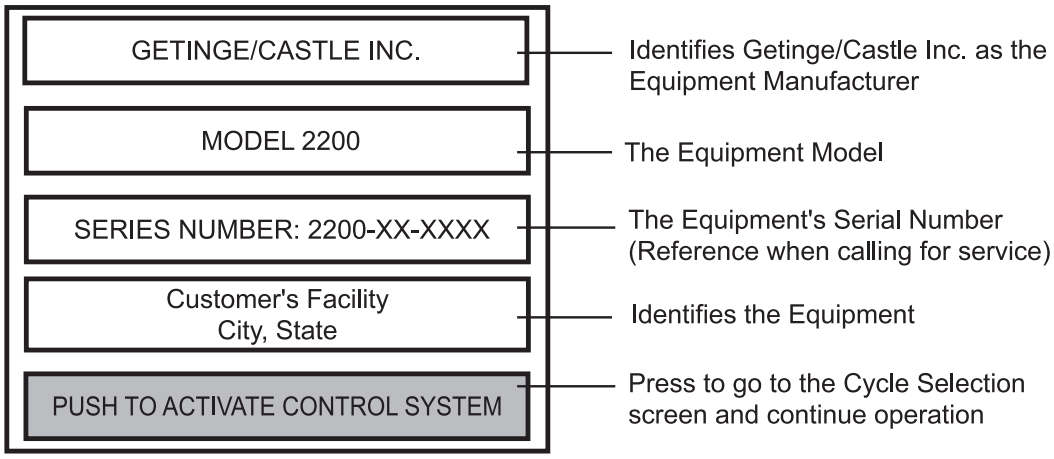
In addition, supervisory personnel can:

- Access load counters and time display
- Protect cycle programming

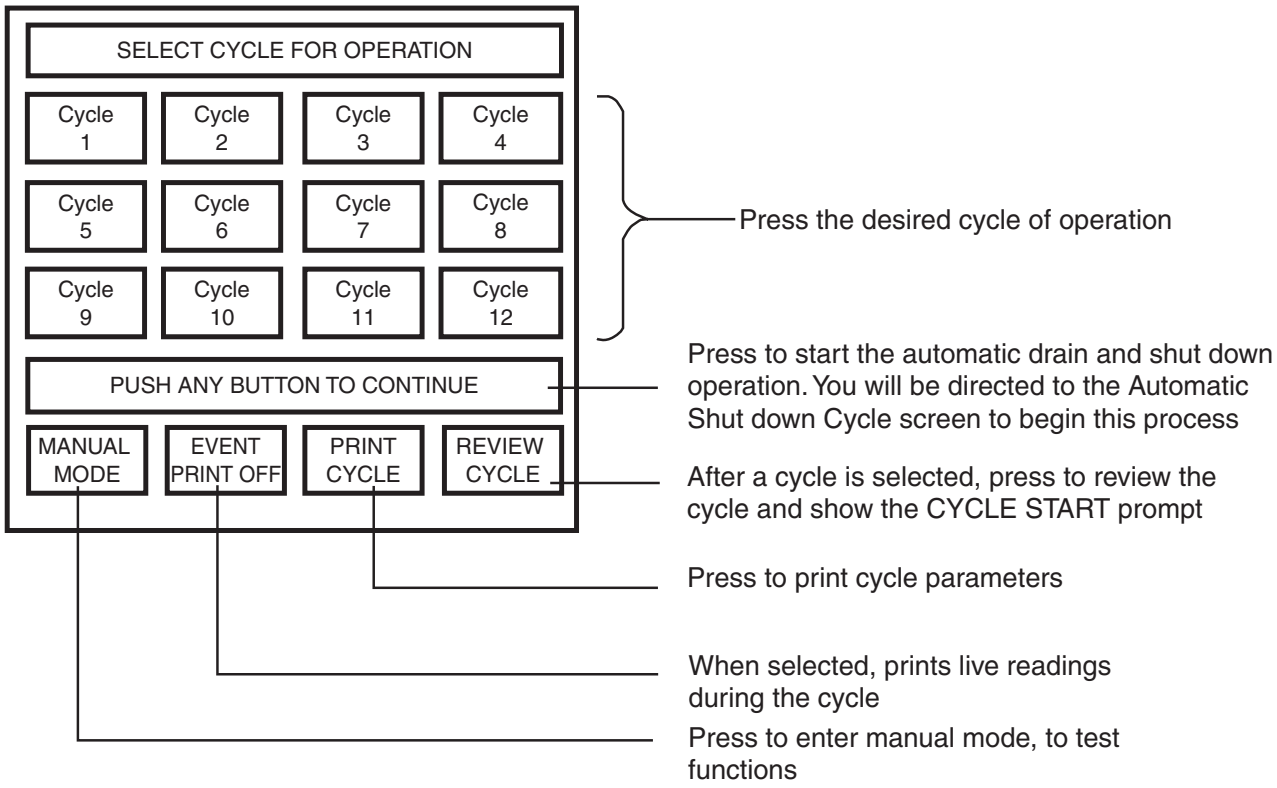
TOUCH CONTROL PANEL (TCP)

Control Screens

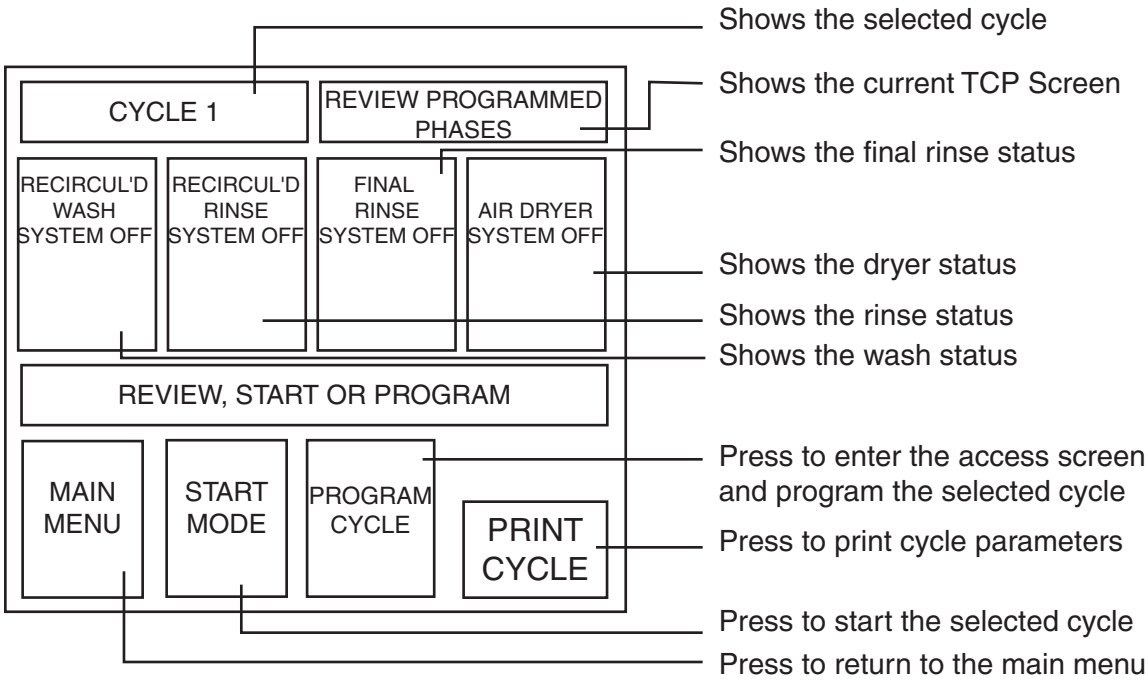
MAIN CONTROL SCREEN

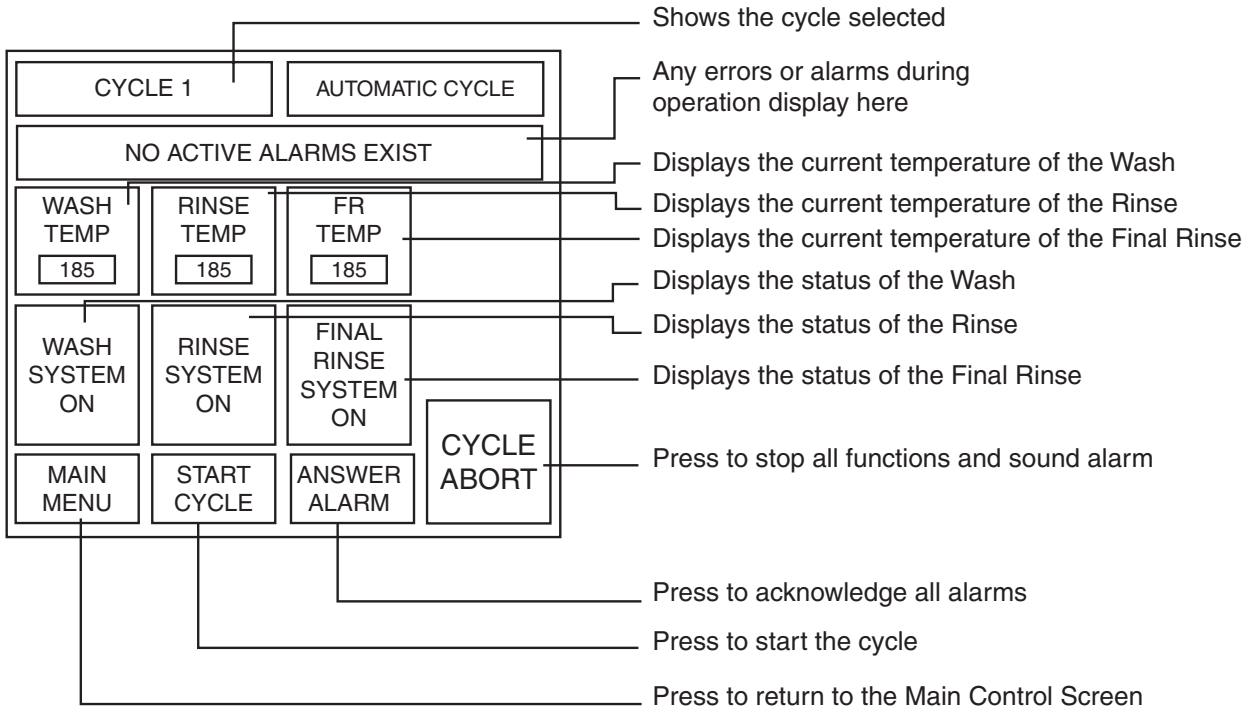

GETINGE/CASTLE INC.
MODEL 2200
SERIES NUMBER: 2200-XX-XXXX
Customer's Facility
City, State
PUSH TO ACTIVATE CONTROL SYSTEM
Identifies Getinge/Castle Inc. as the Equipment Manufacturer
The Equipment Model
The Equipment's Serial Number (Reference when calling for service)
Identifies the Equipment
Press to go to the Cycle Selection screen and continue operation

CYCLE SELECTION SCREEN

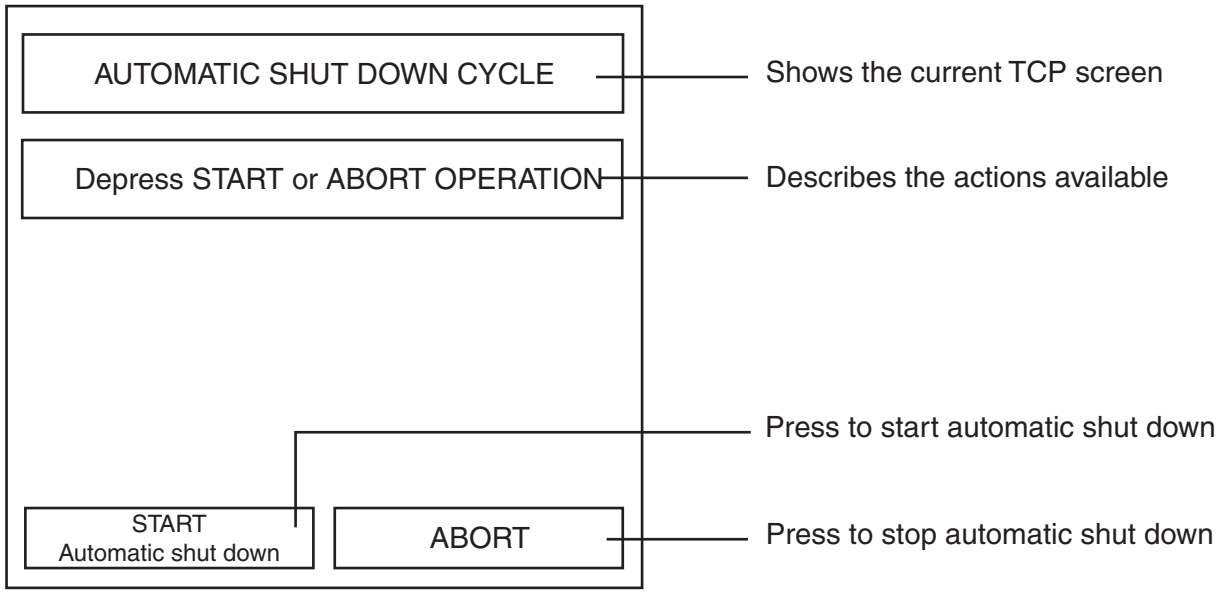

SELECT CYCLE FOR OPERATION
Cycle 1
Cycle 2
Cycle 3
Cycle 4
Cycle 5
Cycle 6
Cycle 7
Cycle 8
Cycle 9
Cycle 10
Cycle 11
Cycle 12
PUSH ANY BUTTON TO CONTINUE
MANUAL MODE
EVENT PRINT OFF
PRINT CYCLE
REVIEW CYCLE
Press the desired cycle of operation
Press to start the automatic drain and shut down operation. You will be directed to the Automatic Shut down Cycle screen to begin this process
After a cycle is selected, press to review the cycle and show the CYCLE START prompt
Press to print cycle parameters
When selected, prints live readings during the cycle
Press to enter manual mode, to test functions

REVIEW PROGRAMMED PHASES SCREEN

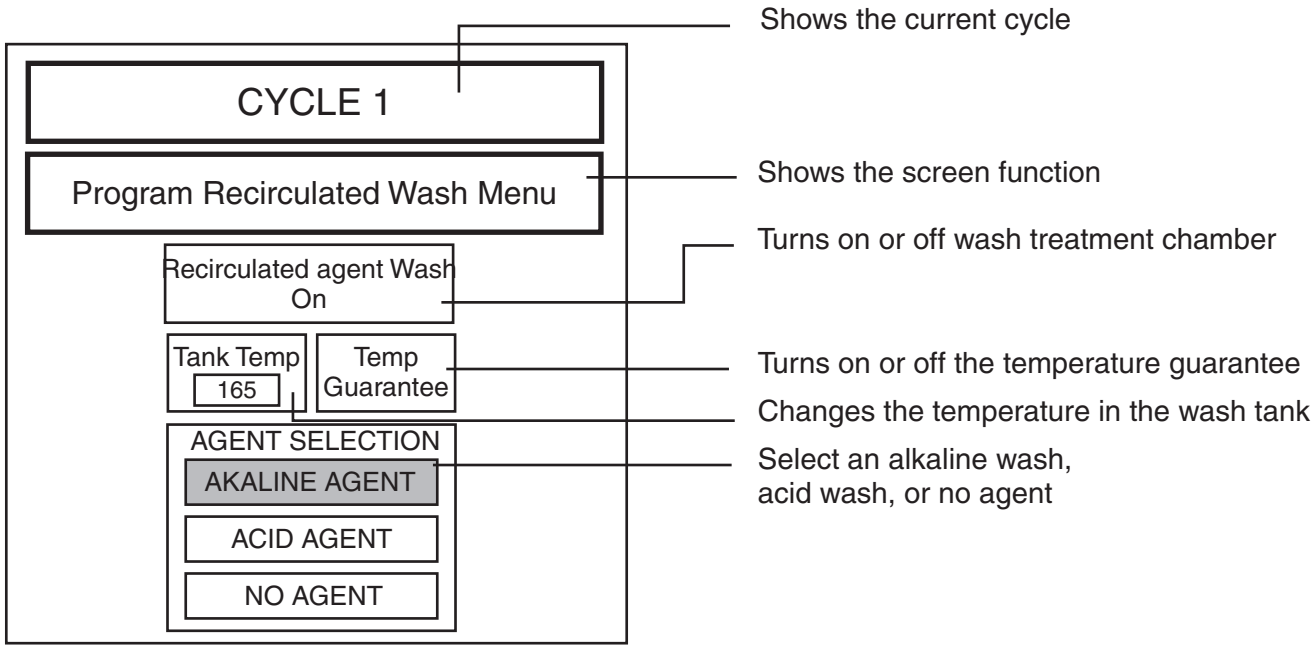

CYCLE 1
REVIEW PROGRAMMED PHASES
RECIRCUL'D WASH SYSTEM OFF
RECIRCUL'D RINSE SYSTEM OFF
FINAL RINSE SYSTEM OFF
AIR DRYER SYSTEM OFF
REVIEW, START OR PROGRAM
MAIN MENU
START MODE
PROGRAM CYCLE
PRINT CYCLE
Shows the selected cycle
Shows the current TCP Screen
Shows the final rinse status
Shows the dryer status
Shows the rinse status
Shows the wash status
Press to enter the access screen and program the selected cycle
Press to print cycle parameters
Press to start the selected cycle
Press to return to the main menu


CYCLE 1
AUTOMATIC CYCLE
NO ACTIVE ALARMS EXIST
WASH TEMP
185
RINSE TEMP
185
FR TEMP
185
WASH SYSTEM ON
RINSE SYSTEM ON
FINAL RINSE SYSTEM ON
CYCLE ABORT
MAIN MENU
START CYCLE
ANSWER ALARM
Shows the cycle selected
Any errors or alarms during operation display here
Displays the current temperature of the Wash
Displays the current temperature of the Rinse
Displays the current temperature of the Final Rinse
Displays the status of the Wash
Displays the status of the Rinse
Displays the status of the Final Rinse
Press to stop all functions and sound alarm
Press to acknowledge all alarms
Press to start the cycle
Press to return to the Main Control Screen

AUTOMATIC SHUT DOWN CYCLE SCREEN

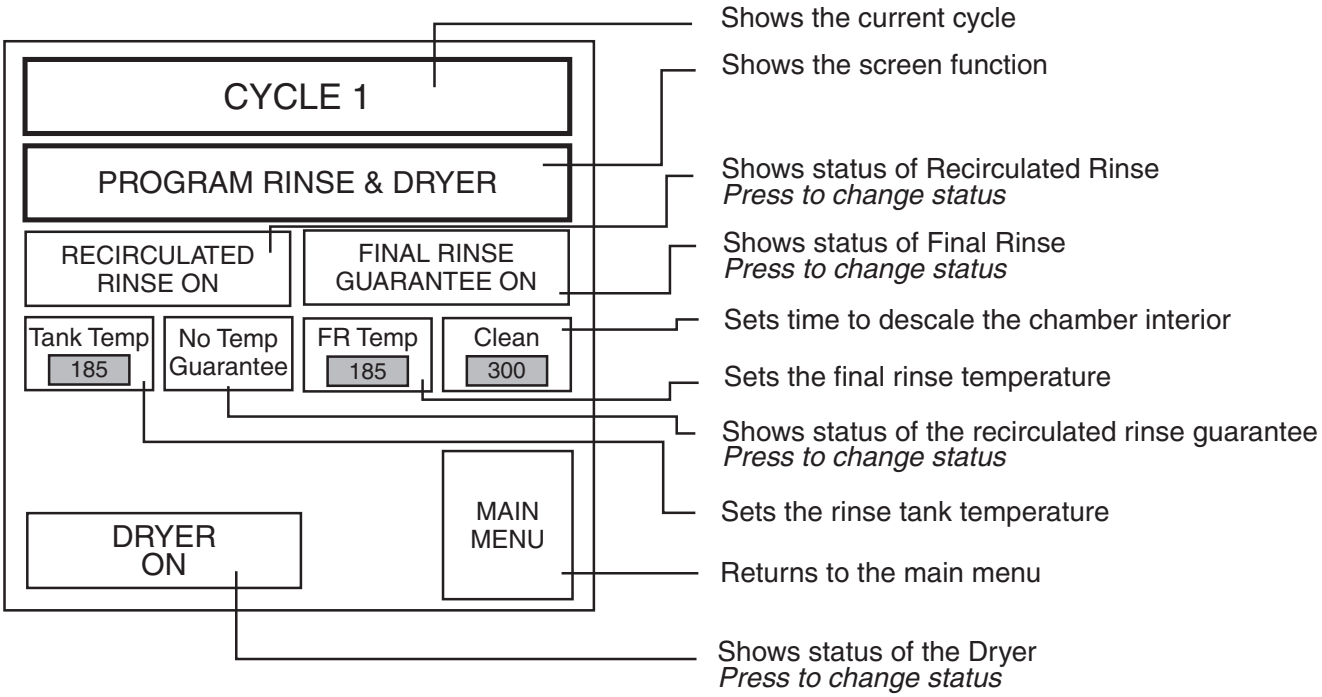


PROGRAM RECIRCULATED WASH SCREEN

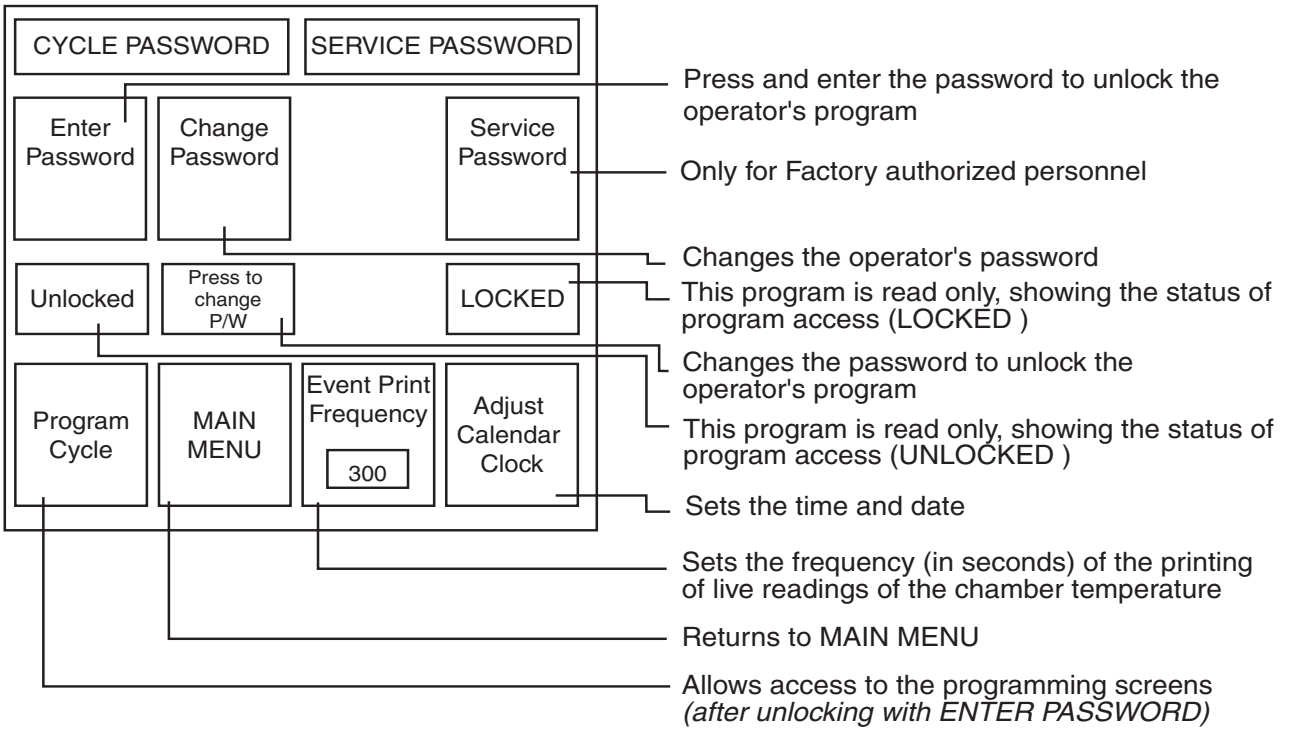


NOTE: SOME FEATURES SHOWN ON THE TOUCH PANEL MAY NOT BE AVAILABLE IF OPTIONS WERE NOT SELECTED.

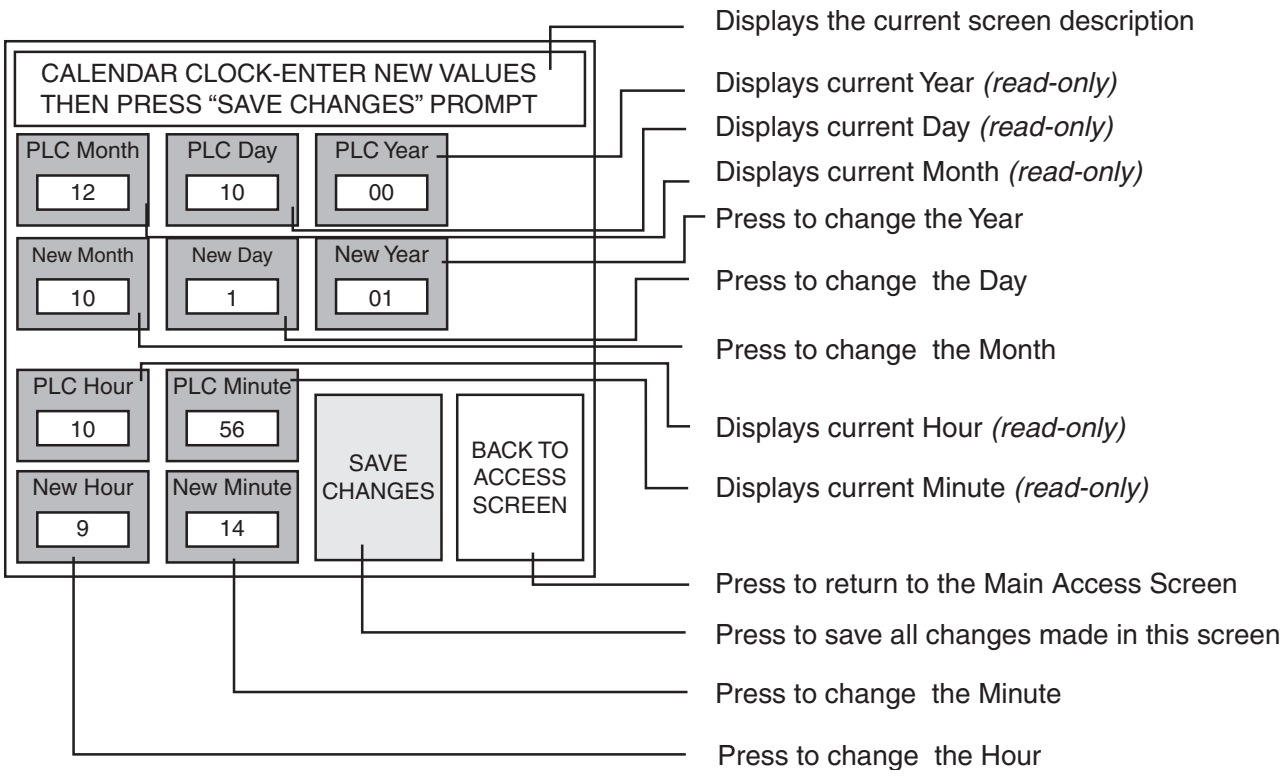
PROGRAM RINSE, FINAL RINSE AND DRYER SCREEN



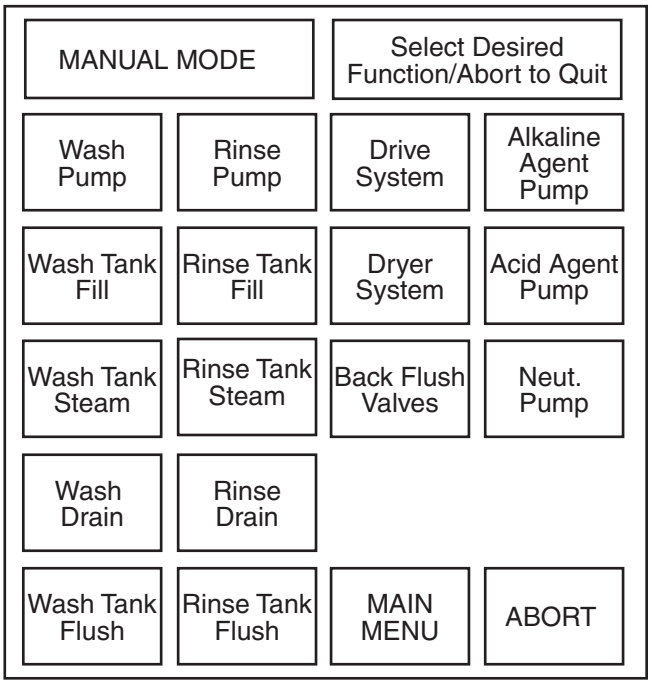
ACCESS SCREEN


CYCLE PASSWORD
SERVICE PASSWORD
Enter Password
Change Password
Service Password
Unlocked
Press to change P/W
LOCKED
Program Cycle
MAIN MENU
Event Print Frequency
300
Adjust Calendar Clock
Press and enter the password to unlock the operator's program
Only for Factory authorized personnel
Changes the operator's password
This program is read only, showing the status of program access (LOCKED)
Changes the password to unlock the operator's program
This program is read only, showing the status of program access (UNLOCKED)
Sets the time and date
Sets the frequency (in seconds) of the printing of live readings of the chamber temperature
Returns to MAIN MENU
Allows access to the programming screens
(after unlocking with ENTER PASSWORD)

CALENDAR CLOCK


CALENDAR CLOCK-ENTER NEW VALUES
THEN PRESS “SAVE CHANGES” PROMPT
PLC Month
12
PLC Day
10
PLC Year
00
New Month
10
New Day
1
New Year
01
PLC Hour
10
PLC Minute
56
New Hour
9
New Minute
14
SAVE CHANGES
BACK TO ACCESS SCREEN
Displays the current screen description
Displays current Year (read-only)
Displays current Day (read-only)
Displays current Month (read-only)
Press to change the Year
Press to change the Day
Press to change the Month
Displays current Hour (read-only)
Displays current Minute (read-only)
Press to return to the Main Access Screen
Press to save all changes made in this screen
Press to change the Minute
Press to change the Hour

MANUAL MODE SCREEN



- Press any prompt to activate a selected component.
- Press the prompt again to stop the selected component, or press ABORT to stop all activated components.
- All safety interlocks are intact in the manual mode. The wash or rinse pumps do not operate if there is not enough water in the tank.
- Tank fill does not activate if the tank is full.
- Tank fill stops when the tank is full.
- Drains remain open until a prompt is pressed again or until the screen is changed.
- Wash and rinse tank steam shut off when the programmed temperature is reached.
- When the rinse pump is activated, the final rinse is activated.
- For more on manual screens, see on page -1.

Cycle Programming

Example: Programming a Sample Cycle

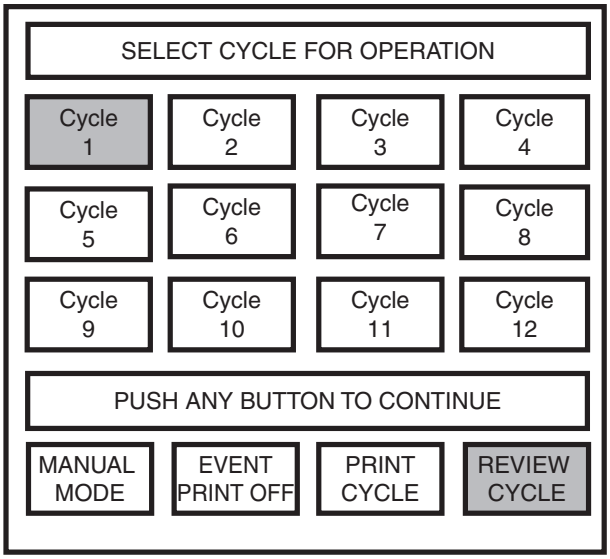
The following is a SAMPLE cycle along with detailed instructions on how to program the cycle for your reference.

PHASE (NS)	On/Off (NS)	TEMPERATURE (°F)	TEMPERATURE GUARANTEE	AGENT
Sample Cycle 1—Touch Control Panel				
Pre-wash				
Wash	On	140	Guaranteed	Alkaline
Recirculated Rinse	On	180	Off	
Final Rinse	On	180		
Recirculated Air Dryer	On			

WHEN THIS SCREEN APPEARS

FOLLOW THESE STEPS

CYCLE SELECTION SCREEN

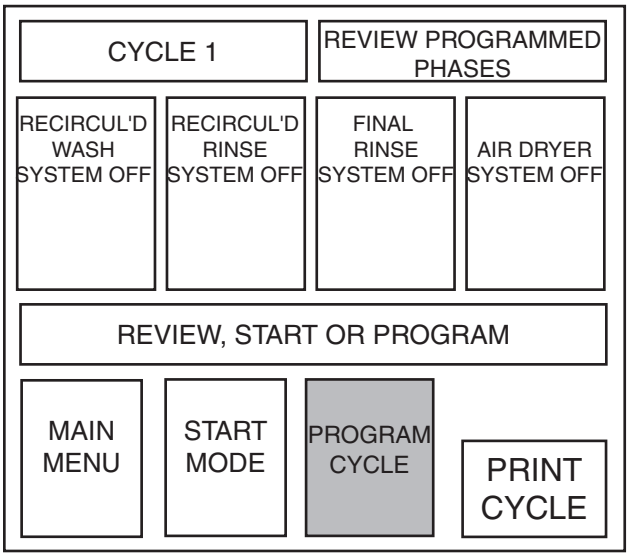


1. Press CYCLE 1
2. Select REVIEW CYCLE

WHEN THIS SCREEN APPEARS

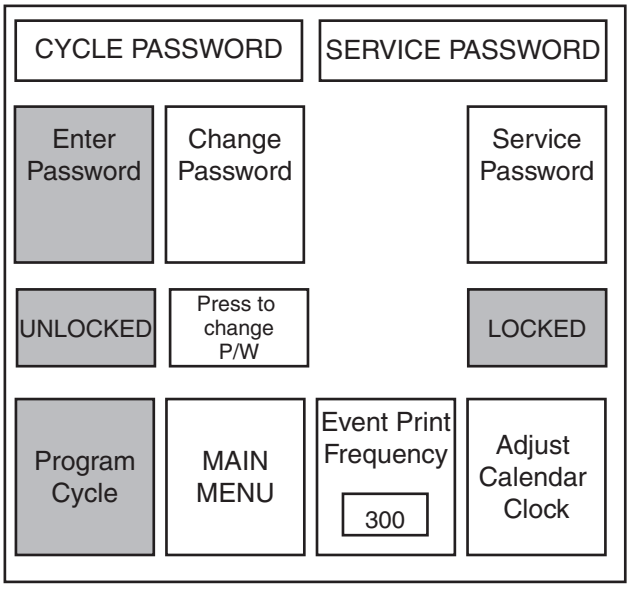
FOLLOW THESE STEPS

CYCLE REVIEW SCREEN



➢ Select PROGRAM CYCLE to enter the CYCLE ACCESS SCREEN

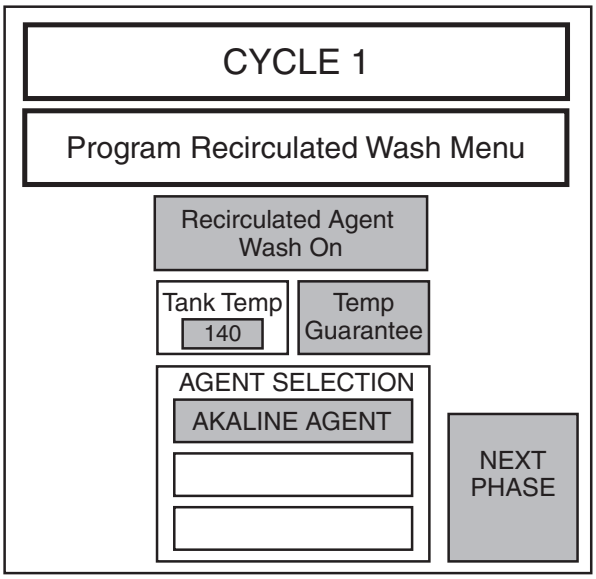
CYCLE ACCESS SCREEN



1. Press ENTER PASSWORD
2. Unlock the system.
   a. Type in correct password “12345”.
   b. Press ENTER.
   c. Press DONE.
3. Select PROGRAM CYCLE

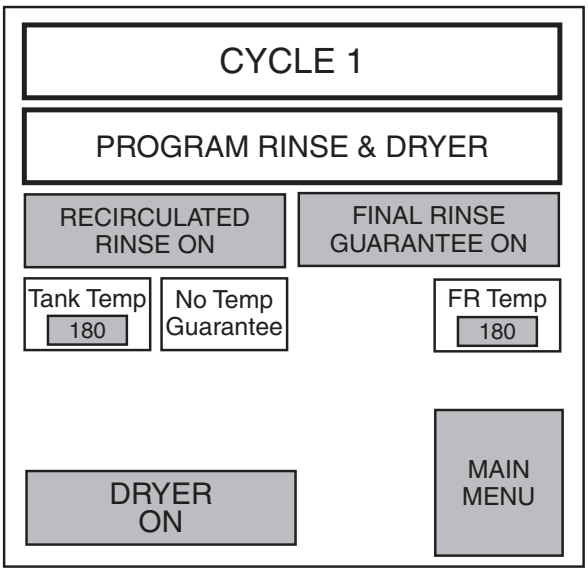
WHEN THIS SCREEN APPEARS	FOLLOW THESE STEPS

PROGRAM WASH PHASE SCREEN

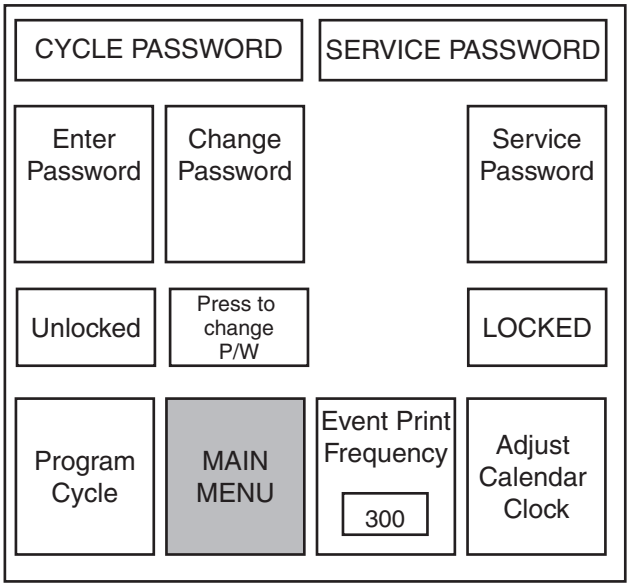


1. Press RECIRCULATED AGENT WASH to ON.
2. Press TANK TEMP, set desired temperature.
3. Press TEMP GUARANTEE to ON if desired.
4. Toggle agent to desired agent.
5. Press NEXT PHASE button when all parameters are set.

PROGRAM RINSE PHASE SCREEN

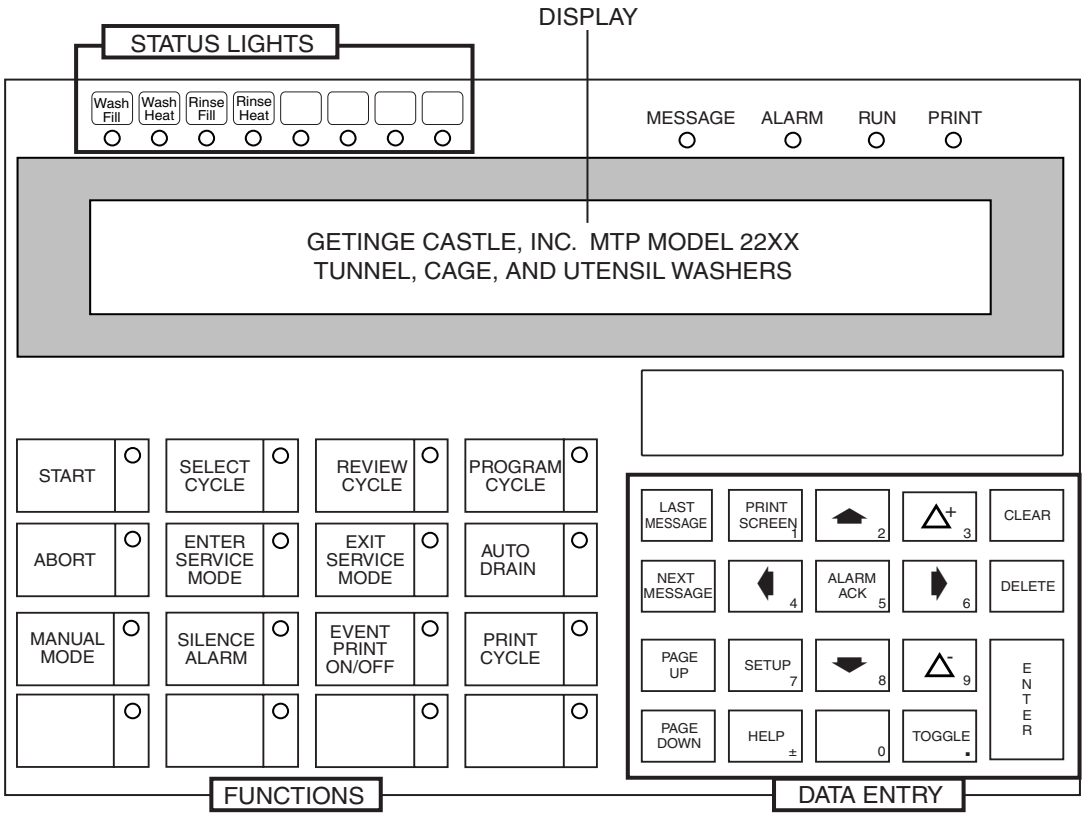


1. Press RECIRCULATED RINSE to ON.
2. Press TANK TEMP. Set desired temperature.
3. Press FINAL RINSE GUARANTEE to ON.
4. Press FR TEMP. Set desired temperature.
5. Press DRYER ON. Set desired temperature.
6. Press MAIN MENU to return to ACCESS MENU.

WHEN THIS SCREEN APPEARS	FOLLOW THESE STEPS
CYCLE ACCESS SCREEN	
	➢ Press MAIN MENU to return to CYCLE SELECTION SCREEN.

LED CONTROLLER

Key Locations

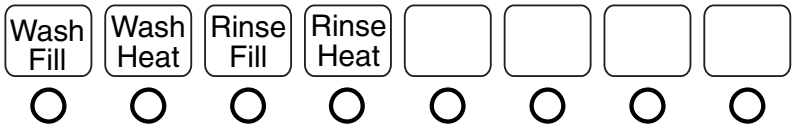


The above screen has been separated into 3 sections:

- Status Lights, see page 2–13
- Function keys, see page 2–14
- Data Entry keys, see page 2–15

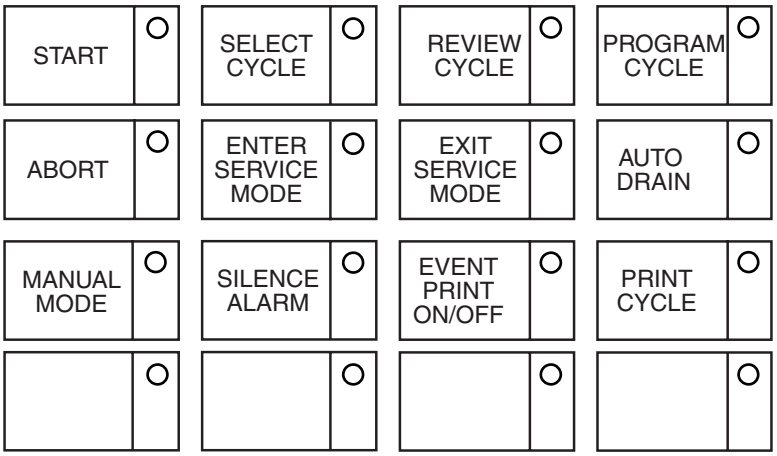
Information on each section follows.

Status Lights



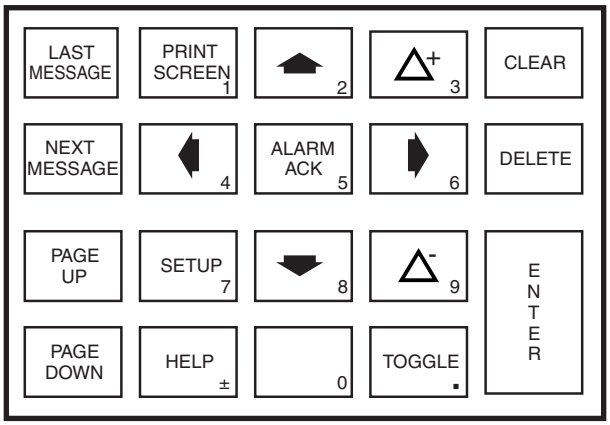
FUNCTION KEY	FUNCTION
Wash Fill	Status light indicates when tank is filling
Wash Heat	Status light indicates when tank is heating
Rinse Fill	Status light indicates when tank is filling
Rinse Heat	Status light indicates when tank is heating
Status Light	Not used
Status Light	Not used
Status Light	Not used
Status Light	Not used

Function Keys



FUNCTION KEY	FUNCTION
START	Start the selected cycle.
ABORT	Stop all functions of washer.
MANUAL MODE	Enter the manual mode.
SELECT CYCLE	Access cycle selection screen.
ENTER SERVICE MODE	For authorized service technician only.
SILENCE ALARM	Silence audible alarm.
REVIEW CYCLE	Review selected cycle.
EXIT SERVICE MODE	Exit service mode and return to stand-by screen.
EVENT PRINT ON/OFF	Record live readings of selected cycle as load is being processed.
PROGRAM CYCLE	Access selected cycle program for parameter changes.
AUTO DRAIN	Activate automatic drain system.
PRINT CYCLE	Print parameters of selected cycle.

Data Entry Keys (keypad)



Key/Function		
LAST MESSAGE — Used to review last screen	HELP ± — Used to receive help information	9 — Used for the #9
NEXT MESSAGE — Used to review next available screen	2 — Used for the #2 or to move cursor up	TOGGLE . — Used to activate components or deactivate components in Manual Mode.
PAGE UP — Used to scroll to previous page	ALARM ACK 5 — Used for the #5	CLEAR — Used to clear old parameters
PAGE DOWN — Used to scroll to next page	8 — Used for the #8 or to move cursor down	DELETE — Not used
PRINT SCREEN 1 — Used for the #1	0 — Used for the #0	ENTER — Used to enter new parameter
4 — Used for the #4 or to move cursor left	3 — Used for the #3	
SETUP 7 — Used for the #7 or place TCP into direct MODEM contact	6 — Used for the #6 or to move cursor right	

Control Sequences

START UP

Turn the power ON to the unit. The unit runs a diagnostic test. Once the controller runs the test, the display screen shows “Getinge/Castle MTP Model 22XX Tunnel and Cage Washer. The unit is now in the standby mode and ready to be used or programmed.

PROGRAMMING

1. The user can program up to 12 different cycles. To begin, press SELECT CYCLE. Press CLEAR on the key pad, and input a cycle between 1 through 12 to be programmed, then press ENTER. This brings up the Review Cycle screen. The user can review the phases of the cycle by pressing the PAGE UP and PAGE DOWN buttons on the key pad.
2. The Prewash phase has fixed settings and cannot be altered. The prewash water is generated from the Recirculated Rinse phase. If the Recirculated Rinse phase is turned OFF, the Prewash phase will also be turned OFF.
3. The Wash phase can be turned ON/OFF using the TOGGLE button on the key pad. Toggle the wash phase to ON. Use the arrow keys, on the keypad, to move the cursor to each item of the phase. Enter the desired water temperature and turn temperature guarantee ON/OFF (as needed). Select detergent type and press ENTER. Press the PAGE DOWN button to go on to the Recirculated Rinse phase.
4. The Recirculated Rinse phase can be turned ON by using the TOGGLE button on the key pad. Enter the desired water temperature and turn temperature guarantee ON/OFF (as needed). Press ENTER. Press the PAGE DOWN button to go to the Final Rinse phase.
5. The Final Rinse phase is always ON. Enter the desired water temperature and turn temperature guarantee ON/OFF (as needed). Press ENTER. Press the PAGE DOWN button to go on to the Recirculated Air Dry phase.
6. The Recirculated Air Dry phase can be turned ON by using the TOGGLE button on the key pad. Press ENTER. Press the PAGE DOWN button to go on to the clock set and password screen, or if programming is complete, press ABORT to exit the program mode.
7. The clock set settings are entered in the same way as the time and temperature are done. Press CLEAR, key in new

settings, and press ENTER. Use arrow keys to move between settings which need to be changed. Press SAVE SETTINGS to save new clock settings. Press the PAGE DOWN button to go on to the password screen, or if programming is complete, press ABORT to exit the program mode.

8. The user can input up to a five-digit password (between 0-32000). Press CLEAR, enter the new password, and press ENTER. Press ABORT to exit program mode.

STARTING WASH CYCLE

To start the unit, the user chooses a preprogrammed cycle by pressing SELECT CYCLE. Press CLEAR on the key pad, and input a cycle between 1 and 12, and press ENTER. Press the START button on the key pad to run the cycle.

ALARM

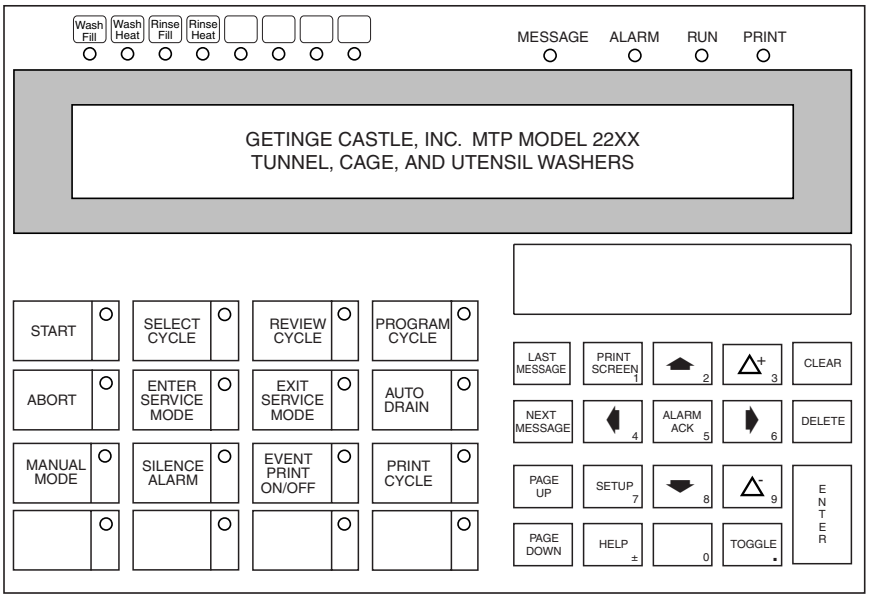
If an alarm should sound at any time, press SILENCE ALARM to turn the sound off, then follow the prompt on the display screen to solve the problem. Press ALARM ACK on the keypad to return to the program.

HELP

A help screen is provided to assist the user. Press the HELP button on the keypad for more information on a particular function.

Processing Cycle Screen Description

Standby Screen



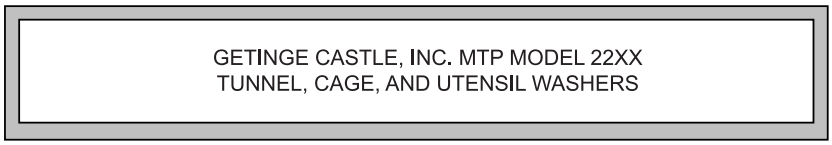
From the Standby Screen, choose:

1) SELECT CYCLE to select the desired cycle

2) REVIEW CYCLE to review parameters of selected cycle.

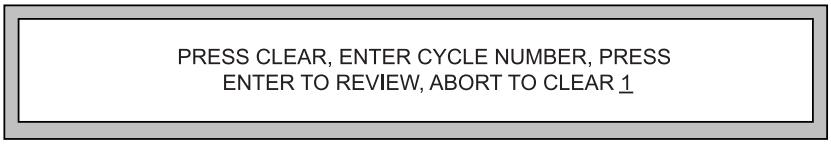
3) MANUAL MODE to test functions of individual components.

SELECT CYCLE



From Standby Screen (shown above)

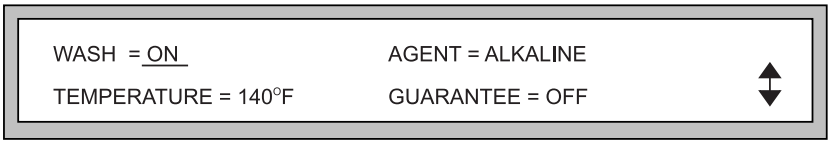
Press SELECT CYCLE button (screen shown below).



1. Press CLEAR.
2. Enter the number of the desired cycle (1 through 12)
3. Press ENTER.

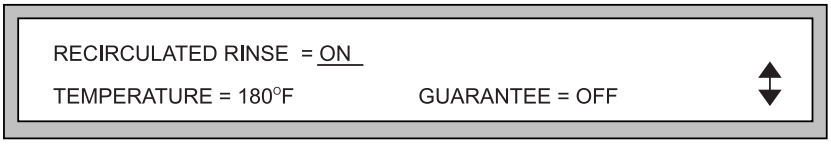
REVIEW CYCLE

REVIEW SCREEN #1.



Press PAGE DOWN to view all parameters of the selected cycle

REVIEW SCREEN #2

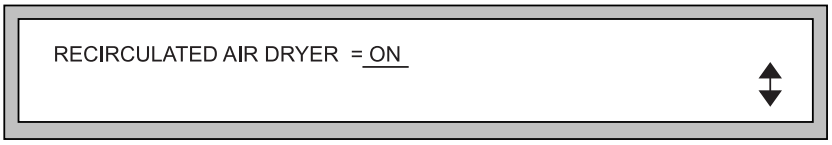


Press PAGE DOWN to view all parameters of the selected cycle

REVIEW SCREEN #3

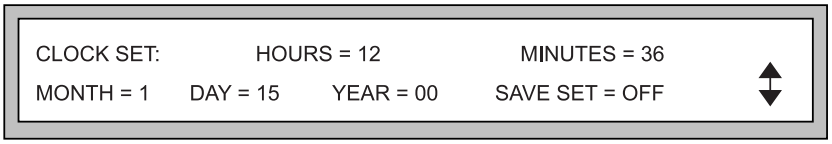
Press PAGE DOWN to view all parameters of the selected cycle

REVIEW SCREEN #4



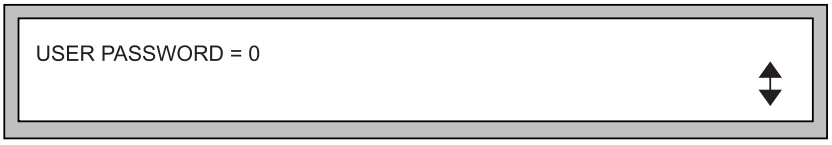
Press PAGE DOWN to view all parameters of the selected cycle

REVIEW SCREEN #5



Press PAGE DOWN to view all parameters of the selected cycle

REVIEW SCREEN #6



Press PAGE DOWN to view all parameters of the selected cycle

MANUAL MODE

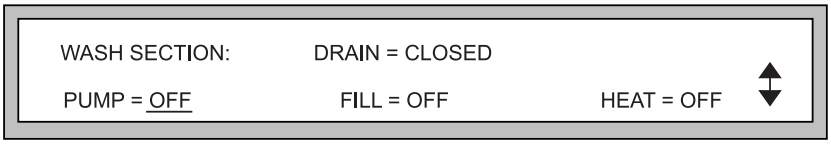
Manual mode allows the user or maintenance technician to test the functions of individual components

When MANUAL MODE is selected, the screen shows individual components that may be activated or deactivated. More than one component may be activated or deactivated at the same time. Press PAGE DOWN or PAGE UP to view more components.

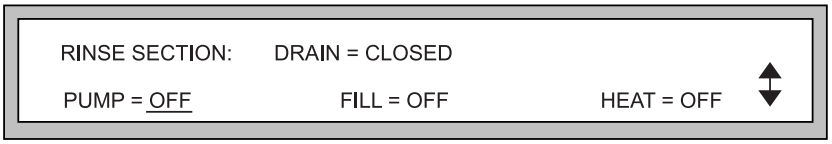
To activate or deactivate a component in Manual Mode:

1. Press PAGE DOWN or PAGE UP until the desired component shows.
2. Use the arrow keys to move the cursor to the desired component.
3. To activate the component, press TOGGLE when the cursor is under the deactivated component.
4. To deactivate a component, press TOGGLE when the cursor is under the activated component.
5. To deactivate all components and return them to standby, press ABORT.

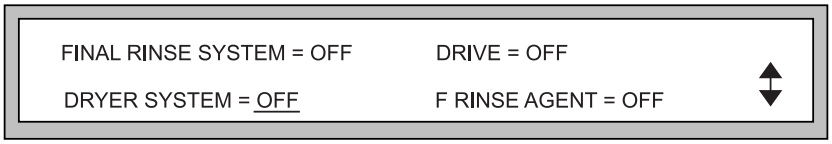
MANUAL SCREEN #1



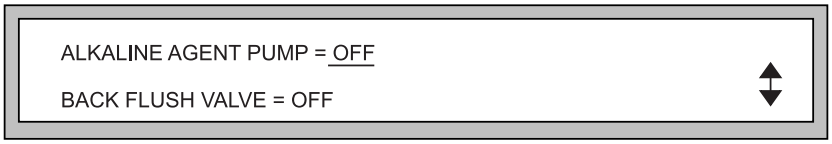
MANUAL SCREEN #2



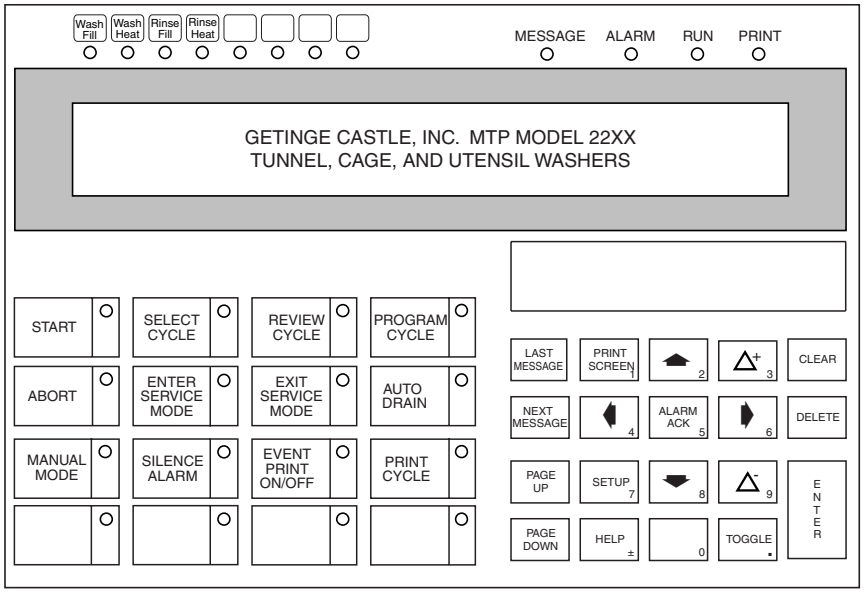
MANUAL SCREEN #3



MANUAL SCREEN #4



Cycle Programming



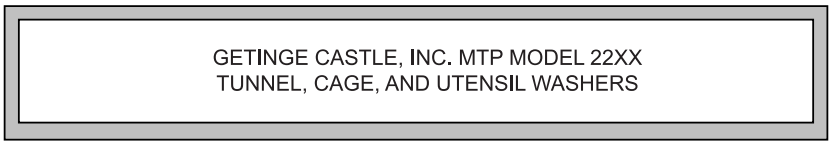
From the Standby Screen the user may change the parameters of the cycle by following these steps:

1. Press SELECT CYCLE.
2. Press CLEAR.
3. Key in the cycle number.
4. Press ENTER.
5. Press the PAGE DOWN or PAGE UP buttons until the screen shows the phase were the change needs to be made.
6. Use the arrow keys to move the cursor to the parameter that needs to be changed
7. Press CLEAR.
8. Enter new time or temperature.
9. Press TOGGLE to turn ON/OFF status of phase.
10. Press ENTER to enter all changes.

When all desired changes have been made:

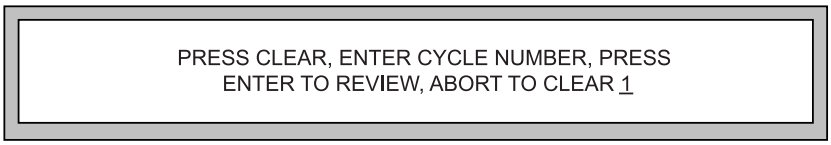
11. Press REVIEW CYCLE to review changes or “PROGRAM CYCLE” to return to the standby screen
12. If equipped with a printer, press PRINT CYCLE to record new parameters on paper printout.

Cycle Selection



From Standby Screen (shown above)

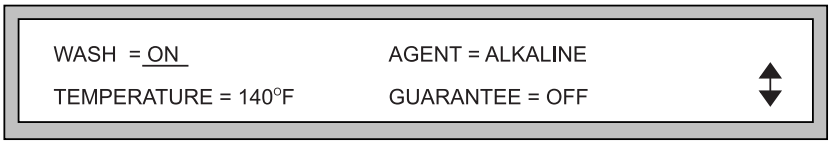
Press SELECT CYCLE button (screen shown below).



1. Press CLEAR.
2. Enter the number of the desired cycle (1 through 12)
3. Press ENTER.
4. Press PROGRAM CYCLE.
5. Press PAGE UP or PAGE DOWN until the desired screen appears.

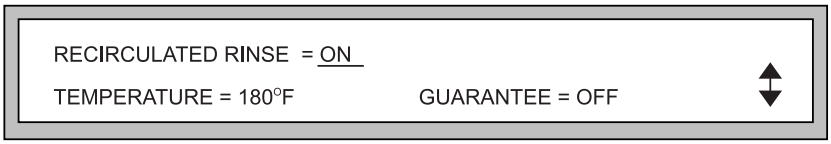
Programming a Cycle

PROGRAM SCREEN #1.



1. Use the arrow keys to move the cursor to the parameter to be changed. Press TOGGLE to turn selection ON/OFF.
2. Press CLEAR, key in new setting, then press ENTER to change parameters.

PROGRAM SCREEN #2.

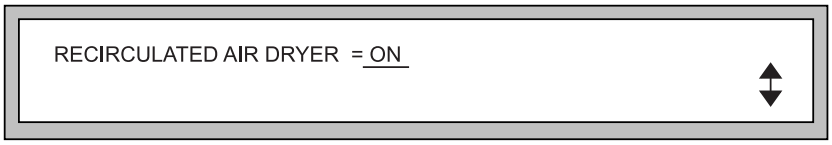


1. Press PAGE DOWN to view the parameters of selected cycle.
2. Use the arrow keys to move the cursor to the parameter to be changed. Press TOGGLE to turn selection ON/OFF.
3. Press CLEAR, key in new setting, then press ENTER to change parameters.

PROGRAM SCREEN #3.

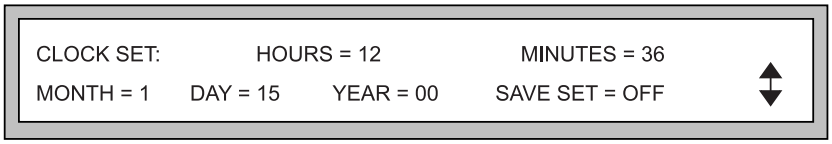
1. Press PAGE DOWN to view the parameters of selected cycle.
2. Use the arrow keys to move the cursor to the parameter to be changed. Press TOGGLE to turn selection ON/OFF.
3. Press CLEAR, key in new setting, then press ENTER to change parameters.

PROGRAM SCREEN #4.



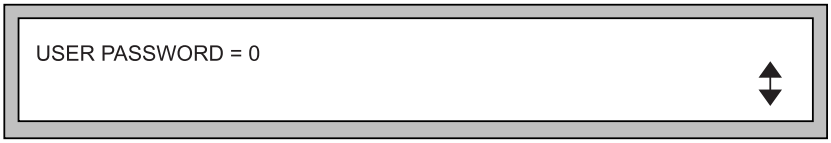
1. Press PAGE DOWN to view the parameters of selected cycle.
2. Use the arrow keys to move the cursor to the parameter to be changed. Press TOGGLE to turn selection ON/OFF.
3. Press CLEAR, key in new setting, then press ENTER to change parameters.

PROGRAM SCREEN #5.



When setting new parameters for DATE AND TIME, enter desired changes, toggle SAVE SET to ON, and press ENTER.

PROGRAM SCREEN #6.

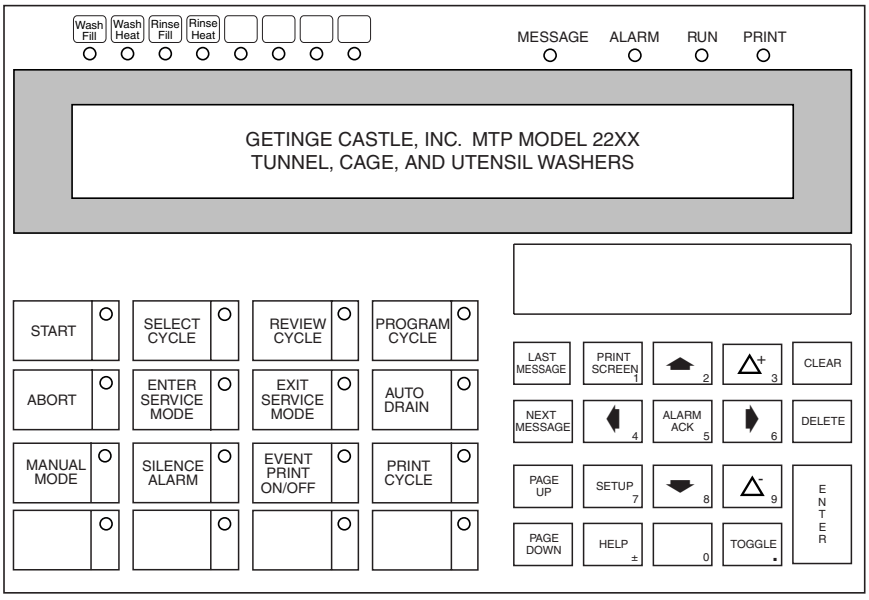


To protect the program from unauthorized changes, enter a password here to lock out access to the PROGRAMING CYCLE phase of the program.

Example: Programming a Sample Cycle

The following is a SAMPLE cycle along with detailed instructions on how to program the cycle for your reference.

PHASE	On/Off	TEMPERATURE (°F)	TEMPERATURE GUARANTEE	AGENT
Sample Cycle 1—LED Controller				
Pre-wash				
Wash	On	165	Guaranteed	Alkaline
Recirculated Rinse	On	180	Off	
Final Rinse	On	180	Guaranteed	
Recirculated Air Dryer	On			



Start Up

Turn the power ON to the unit. At this time, the unit will go through a diagnostic test. Once the controller runs the test, the display screen will show, “Getinge Castle, Inc. MTP Model 22XX Tunnel and Cage Washer.” The unit is now in the standby mode and ready to be used or programmed.

Programming

1. The user can program up to 12 different cycles. To begin, press SELECT CYCLE. Press CLEAR on the key pad, input a cycle between 1 through 12 to be programmed, then press ENTER. This will bring up the Review Cycle

screen. Using PAGE UP and PAGE DOWN on the key pad, the user can review each phase of that cycle. If the cycle needs to be programmed or changed, press PROGRAM CYCLE. You are now ready to program each phase of the sample cycle noted on the previous page.

2. The Prewash phase has fixed settings and cannot be altered. The prewash water is generated from the Recirculated Rinse phase. If the Recirculated Rinse phase is turned OFF, the Prewash phase will also be turned OFF.
3. The Wash phase can be turned ON/OFF by using the TOGGLE button on the key pad. Toggle the wash phase to ON. Use the arrow keys, on the keypad, to move the cursor to each item of the phase. Move the cursor to TEMPERATURE, press CLEAR, input 165, and press ENTER. Move the cursor to GUARANTEE and toggle ON. Move the cursor to AGENT and toggle to ALKALINE. Once you have completed the wash phase, press PAGE DOWN to go on to the Recirculated Rinse phase.
4. The Recirculated Rinse phase can be turned ON/OFF by using the TOGGLE button on the key pad. Move the cursor to TEMPERATURE, press CLEAR, input 180, and press ENTER. Move the cursor to GUARANTEE and toggle OFF. Once you have completed the Recirculated Rinse phase, press PAGE DOWN to go on to the Final Rinse phase.
5. The Final Rinse phase is always ON. Move the cursor to TEMPERATURE, press CLEAR, input 185, and press ENTER. Move the cursor to GUARANTEE and toggle ON. Once you have completed the Final Rinse phase, press PAGE DOWN to go on to the Recirculated Air Dryer phase.
6. The Recirculated Air Dry phase can be turned ON/OFF by using the TOGGLE button on the key pad. Once you have completed the Recirculated Air Dryer phase, press PAGE DOWN button to go on to the Clock Set and Password screen. If programming is complete, press ABORT to exit program mode.
7. The Clock Set settings are entered in the same way as the time and temperature are done. Press CLEAR, key in new setting, and press ENTER. Use arrow keys to move between settings which need to be changed. Press SAVE SETTINGS to save new clock settings. Press PAGE DOWN to go on to the Password screens. If programming is complete, press ABORT to exit program mode.

8. You can input up to a five digit password (between 0-32000). Press CLEAR, input the new password, and press ENTER. Press ABORT to exit program mode.

Starting Wash Cycle

To start the unit, choose a preprogrammed cycle by pressing SELECT CYCLE. Press CLEAR on the key pad, input a cycle between 1 through 12, and press ENTER. Press START button on the key pad to run cycle.

Alarm

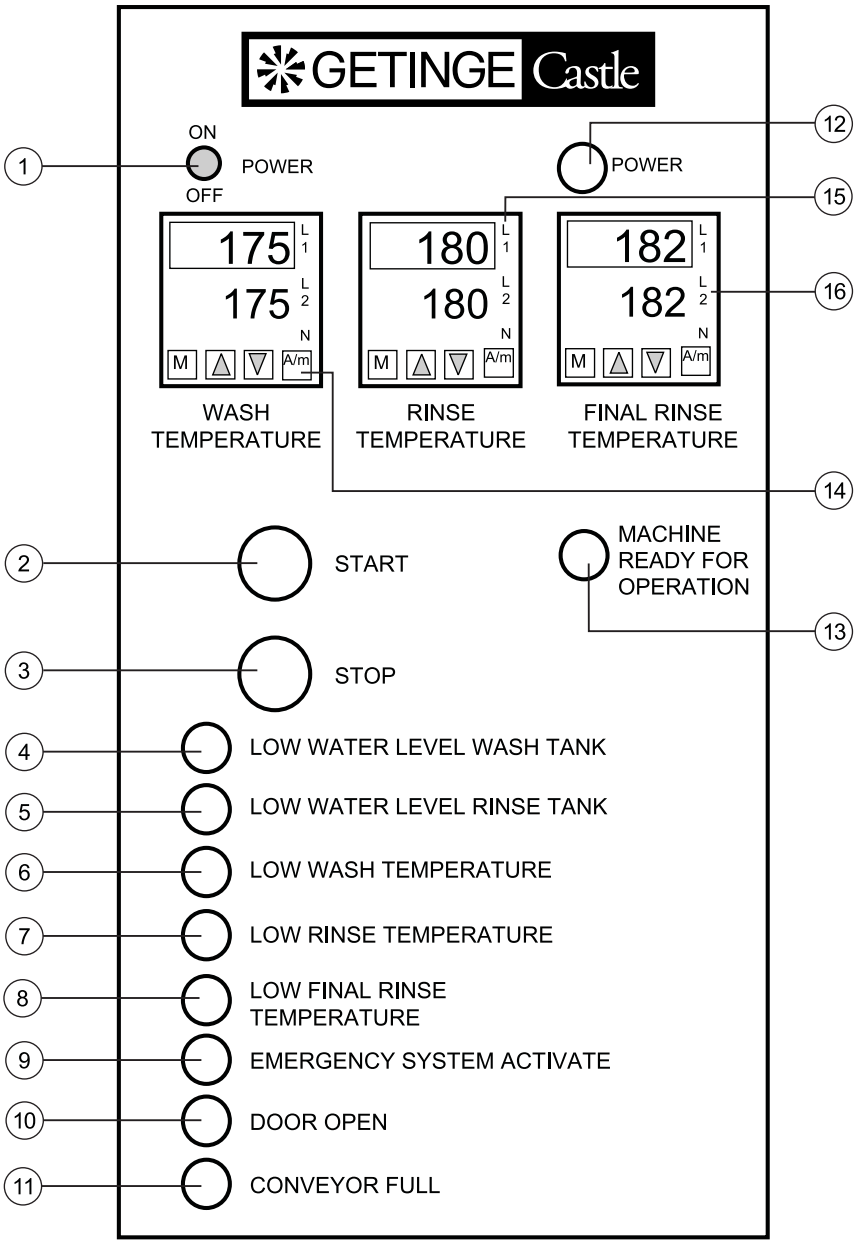
If an alarm should sound at any time, press ALARM SILENCE to turn the sound off, then follow the prompt on the display screen to solve the problem. Press ALARM ACK on the keypad to return to the program.

Help

A help screen is provided to assist the user. Press the HELP button on the keypad for more information on a particular function.

ELECTRO-MECHANICAL CONTROLS

Control Panel



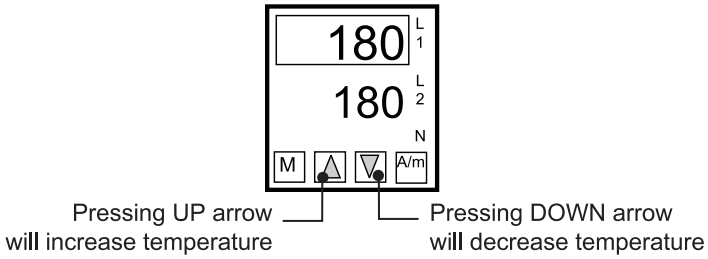
Item #	Component
1. POWER Switch	Turns power ON/OFF to the control circuit. **(Must be ON for the machine to operate.)**
2. START	Starts an automatic cycle **(after the machine is ready and the start light is ON).**
3. STOP	Stops all function of the unit without sounding the alarm.
4. Low Water Level Wash Tank	An indicator light only. Lights when the wash fill timer times out. When indicator is on, all functions stop except for the fill operation.
5. Low Water Level Rinse Tank	An indicator light only. Lights when the rinse fill timer times out. When this indicator is on, all functions stop except for the fill operation.
6. Low Wash Temperature	An indicator light only. Lights when the wash steam timer times out. When indicator is ON, all functions stop except for the heating operation.
7. Low Rinse Temperature	An indicator light only. Lights when the rinse steam timer times out. When indicator is ON, all functions stop except for the heating operation.
8. Low Final Rinse Temperature	An indicator light only. Lights when the final rinse steam timer times out. When indicator is ON, all functions stop except for the heating operation.
9. Emergency System Activated	An indicator light only. Lights when the Emergency Cable at the load or unload end of the machine has been pulled.
10. Door Open	An indicator light only. Lights when one or more of the chamber access doors are opened. All doors must be closed and safety reset switch activated before unit will allow a restart.

Item #	Component
11. Conveyor Full	An indicator light only. Lights when the photo eye at the unload end is blocked. When the indicator is ON, all functions of the machine are active except for the conveyor belt. When the obstruction is removed, the conveyor belt resumes operation.
12. Power	An indicator light only. Lights when the power switch is ON.
13. Machine Ready for Operation	An indicator light only. Lights when all conditions are satisfied–wash and rinse tanks are full and at set point temperature. Only at this point should the START button be pressed
14. Wash Temperature	This controls and monitors the heat in the wash tank.The controller displays the temperature as the machine is running. Temperature settings may be changed by pressing the up arrow or down arrow key to the desired settings.
15. Rinse Temperature	This controls and monitors the heat in the rinse tank. The controller displays the temperature as the machine is running. Temperature settings may be changed by pressing the up arrow or down arrow key to the desired settings.
16. Final Rinse Temperature	This monitors the heat in the final rinse water. The controller displays the temperature as the machine is running. Temperature settings may be changed by pressing the up arrow or down arrow key to the desired settings. When the temperature falls below the set point, the final rinse steam timer starts to time. If the set point is not achieved before the timer times out, the conveyor belt stops and LOW FINAL RINSE TEMPERATURE lights.

Cycle Programming

1. **PreWash** The prewash is powered by the rinse pump and only controlled by the hand valve located on the utility side load end.
2. **Wash Section** The wash is recirculated by the wash pump. The wash pump will activate when in automatic cycle if water level is up to proper level. The tank refills during processing from the wash tank fill valve.
3. **Wash Temperature Controller** Temperature controller is programmable from 160° to 190°F. To change temperature, press the arrow in the direction of desired change (up arrow to increase temperature and down arrow to decrease temperature).

Figure 2–1. WASH TEMPERATURE CONTROLLER

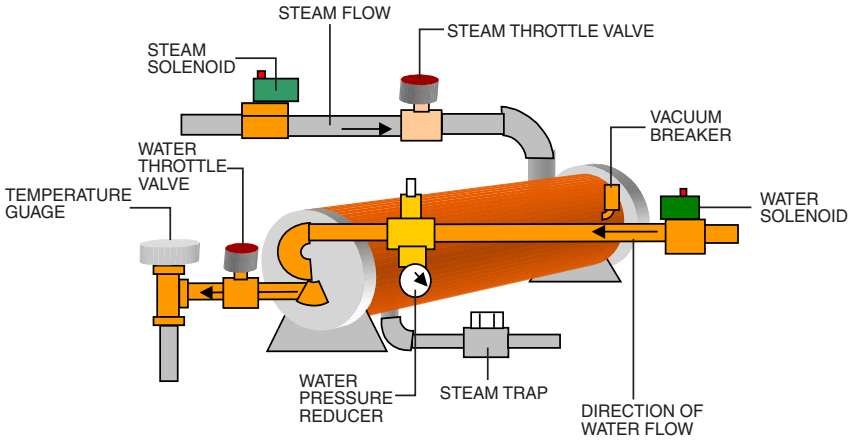


4. **Rinse Treatment pump** The rinse is controlled by the rinse pump. The rinse pump activates when in automatic cycle if water level is up to proper level. The tank refills during processing from the rinse tank fill valve. The rinse tank will normally not need to refill during the normal processing period due to the constant flow of final rinse water flowing into the rinse tank.
5. **Rinse Temperature Controller** Temperature controller is programmable from 160° to 190°F. To change temperature, press the arrow in the direction of desired change (up arrow to increase temperature and down arrow to decrease temperature).
6. **Final Rinse Temperature Controller** Temperature controller is programmable from 160° to 195°F.

Final Rinse Temperature Settings

1. Turn water to full open setting.
2. Turn steam to full open setting (temperature not to exceed 195°F).
3. If water at full open and steam at full open does not create an output temperature of 195°F, turn water flow down until 195°F is achieved.
4. If water at full open and steam at full open exceeds 195°F, turn steam throttle valve down until in 195°F range.
5. If temperature becomes unstable, turn the water pressure regulator down to 5 psi lower than dynamic house pressure and repeat steps 1 to 4.

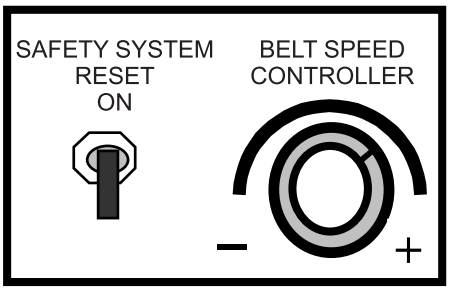
Figure 2–2. WATER AND STEAM FLOW DIAGRAM



Internal Timers

1. **Wash Fill Timer** times how long wash tank should require to fill. If wash tank does not fill before timer times out unit will shut down.
2. **Rinse Fill Timer** times how long rinse tank should require to fill. If rinse tank does not fill before timer times out unit will shut down.
3. **Safety System Reset** allows user to reset safety system after alarm has been satisfied (closed door or by placing machine in stand by to refill or heat) switch will return to normal position when released.
4. **Wash Steam Timer** times how long wash tank should need to reach programmed temperature. If temperature is not achieved before timer times out unit will shut down.
5. **Rinse Steam Timer** times how long rinse tank should need to reach programmed temperature. If temperature is not achieved before times out unit will shut down.
6. **Final Rinse Timer** times how long the final rinse needs to heat up to the programmed temperature. If temperature is not achieved before timer times out unit will shut down.
7. **Variable Speed Controller** controls the speed of the conveyor belt. Turn knob located on the back side of the control panel clock wise to minimum speed 2 feet per minute, maximum speed 10 feet per minute.

Figure 2–3. VARIABLE SPEED CONTROLLER



Section 3 Operating Instructions

GENERAL MACHINE OPERATION

Instructions here apply to the daily operation of this unit. They assume that the unit has been properly installed and pre-tested: that the compartment is clean, cycle selections have been programmed, the liquid supplies are set up, and any optional equipment is ready.

- *BURN HAZARD: Do not open chamber access doors during a cycle. This could release hot water through the door opening, resulting in burns to personnel.*
- *HOT SURFACES: The metal surface that surrounds the opening at the load and unload end of unit becomes hot during normal operation. Use caution when loading and unloading the washer.*

Start-up

At the start of the processing period, activate the unit for automatic operation:

Turn on the main disconnect switch.

- The unit automatically goes to a self diagnostic test then fill with fresh water and start heating up to programmed temperature. When filling and heating are complete the display shows “Ready for Operation”.
- **Units with Touch Control Panel (TCP) only:** The Touch Control Panel (TCP) immediately lights and performs a self-diagnostic test. Once complete the system Standby Screen displays and the machine is ready for operation.

Operating Instructions

1. Place the load to be cleaned on the stainless steel flat wire conveyor.
2. Select the desired cycle
(see “Treatment Schedule” on page 3–2).
3. Press the START button.
   - The unit automatically proceeds through the treatment process and delivers the items at the unload end of the machine.
   - A photoelectric switch at the end of the discharge conveyor automatically stops the conveyor drive when an

item reaches the end of the conveyor. A stopped conveyor condition is indicated on the control screen.

Shutdown

At the end of the processing period, place the unit in the standby mode:

Press the STOP button.

- All processing functions immediately stop and the wash and rinse tanks automatically refill and maintain heat.

Treatment Schedule

The treatment schedule is listed below. For additional information, refer to “Treatment Schedule” on page 1–10. The process for the wash cycle is as follows:

- Prewash
- Agent Wash
- Recirculated Rinse
- Non-Recirculated Final Rinse
- Recirculated Air Dry

DAILY CHECKLIST

HOT SURFACES: The metal surface that surrounds the opening at the load and unload end of unit is hot during normal operation. To avoid burns, use caution when loading and unloading the washer.

Before operating the unit each day:

1. Check the printer paper roll and replace it if necessary. See page 7–4.
2. Clean the debris basket and drawers in the chamber drain. See page 4–3
3. Check chemical supplies.
4. Clean drawer-type and basket-type debris filters.
5. Check the chemical dispenser (if the unit has the optional Automatic Agent Injection System, see “Automatic Agent Injection System” on page 7–10).

Operational Readiness

To ensure that the washer is ready for processing without requiring a warm-up period, leave the washer ON during regular periods of inactivity.

EMERGENCY STOP

Burn hazard. Do not open a station access door for at least five seconds after stopping a processing cycle that was running a hot wash or rinse water phase. This allows time for the spray manifolds to stop functioning; otherwise hot water could spray out of the door opening, resulting in burns to personnel.

Using the Emergency Cable

1. Pull the EMERGENCY CABLE either at the load end or the unload end.
   - The unit ceases operation.
2. To resume operation, press EMERGENCY CABLE RESET either at the load end or the unload end.

EMERGENCY SHUT-DOWN

Shutting Down the Washer

In an emergency, it may be necessary to remove electrical power supplied to the washer or to turn off the steam and water supplies. All users should know the location of the main circuit breaker to disconnect the main electrical power and the steam and water supply shutoff valves at the washer site.

The Electrical Disconnect Switch de-energizes the controls only; it does not remove all power from the washer.

Section 4 Maintenance

GENERAL MAINTENANCE SCHEDULE

The customer is responsible for these maintenance items at the intervals specified. Optional items may require additional maintenance. Refer to your Customer Manual for this information.

PERFORMANCE ASSURANCE PLAN

Preventive maintenance performed by factory-trained service representatives, using authorized parts and service techniques, is recommended. Recognizing symptoms of potential trouble and making corrections immediately is less costly and time consuming than repairing damaged equipment. Our Performance Assurance Plan offers scientific maintenance, not merely repair service.

For quality service on this equipment and information on our Performance Assurance Plan, contact Getinge/Castle, Inc. 1777 East Henrietta Road, Rochester, NY 14623-3133 or call 1-800-950-9912.

A Service Data Manual for this unit may be purchased from Getinge/Castle, Inc.

Table 4–1. Maintenance Schedule—Standard

MAINTENANCE ITEM	INTERVAL	SEE PAGE
• LOAD PRINT PAPER (option)	WHEN REQUIRED	4–2
• TEST THE SAFETY SYSTEMS • CLEAN THE PRIMARY DEBRIS FILTERS • INSPECT THE AUTOMATIC SELF-CLEANING DEBRIS FILTER SCREEN AND TANK	DAILY	4–2 4–3 4–3
• CLEAN THE SPRAY JETS AND HEADERS • INSPECT THE TEMPERATURE AND WATER LEVEL PROBES FOR DEBRIS AND DAMAGE • GREASE THE SHAFT BEARINGS • MAINTAIN THE CABINET	WEEKLY	4–4 4–4 4–4 4–4
• OIL THE HOLD DOWN CHAIN	MONTHLY	4–4
• LUBRICATE THE PUMP MOTOR • CHECK AND ADJUST THE CONVEYOR BELT TENSION • CHECK THE GFI SENSOR	EVERY SIX MONTHS	4–5 4–5 4–5

ROUTINE MAINTENANCE SCHEDULE—STANDARD

When required

LOAD PRINT PAPER (option)

See “LOADING PAPER” on page 4.

Daily

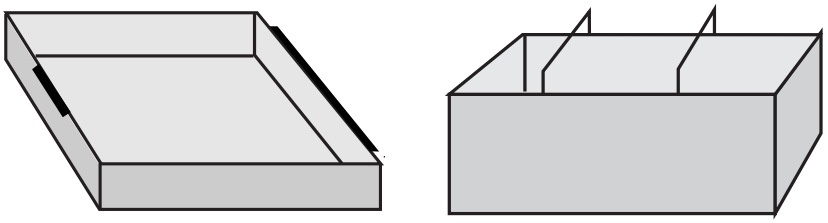
TEST THE SAFETY SYSTEMS

NOTE ▶

Ensure that two (2) or more individuals are always present for this test.

1. Manually open each chamber access door in standby mode. Each time the operator should observe:
   a. alarm sounds
   b. machine is disabled
2. Close the doors and reset the safety system.
3. Pull the EMERGENCY STOP cables on both the Load and Unload Ends one at a time to test for functionality.Each time the operator should observe:
   a. alarm sounds
   b. machine is disabled
4. Reset the EMERGENCY STOP cables and reset the safety system.
5. To reset after testing, the operator should turn on the safety reset system. **(The switch does not return by itself.)** The switch is on the back side of the control panel.

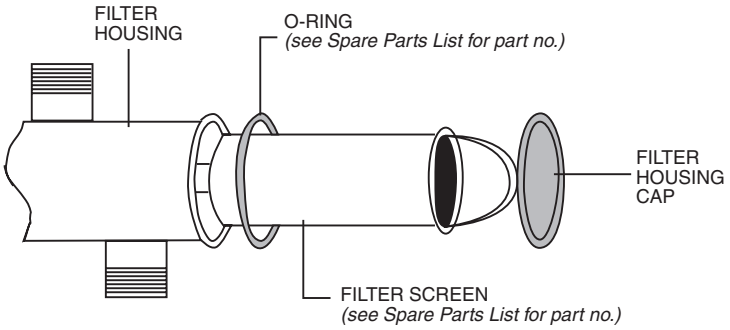
Figure 4–1. DRAWER-TYPE AND BASKET-TYPE DEBRIS FILTERS



CLEAN THE PRIMARY DEBRIS FILTERS

1. Remove the Primary Debris Filters – Two (2) Drawer-Type and Two (2) Basket-Type.
   a. Drawer Debris Filter (2) located at Load end of washer
   b. Basket Debris Filters (2) located in front of Wash Chamber Access Door and Rinse Chamber Access Door
2. Clean the debris from the filters with water.
3. Replace all three (3) Primary Debris Filters.

Figure 4–2. AUTOMATIC SELF-CLEANING DEBRIS FILTER



INSPECT THE AUTOMATIC SELF-CLEANING DEBRIS FILTER SCREEN AND TANK

1. Turn power OFF.
2. Remove retainer clamp on filter cover
3. Remove the cover, gasket, and filter screen
4. Rinse any debris out of screen
5. Carefully place filter screen back into filter housing
6. Place gasket and cover on the assembly and secure retainer.

Weekly

CLEAN THE SPRAY JETS AND HEADERS

1. With power turned off, open Chamber Access Doors **(a flashlight may be needed)**.
2. If debris is present in jet, pull header out. **Remove only one header at a time.**
3. Push the debris through the jet and into the header with a small wire.
4. Remove the flush plugs from the end of the spray headers.
5. Manually flush header in a sink to force loosened debris from the spray headers
6. Reinstall flush plugs
7. Place header back into unit where it was removed from.

INSPECT THE TEMPERATURE AND WATER LEVEL PROBES FOR DEBRIS AND DAMAGE

1. Locate the temperature and water level probes in the wash and rinse section tanks. **(Accessed externally)**
2. Drain wash and rinse tanks.
3. Remove tank cover for each tank.
4. Gently wipe off any debris around temperature and water level probes with a cloth.
5. Replace tank cover for each tank.

GREASE THE SHAFT BEARINGS

1. Two grease fittings located at the load end and two at the unload end near the bottom, giving the unit a total of four. Depending upon dryer option there will be additional grease fittings in the beginning of the dryer section that need to be greased.
2. Each grease fitting requires two pumps with a grease gun.

NOTE▶

Grease should be Lithium#2 or equivalent.

MAINTAIN THE CABINET

To maintain cabinet luster, wipe down with non-abrasive stainless steel cleaner in straight line with direction of grain.

Monthly

OIL THE HOLD DOWN CHAIN

1. Run hold down to highest position
2. Using spray oil (WD-40), spray exposed chain on top of the machine.

Six Months

LUBRICATE THE PUMP MOTOR

Re-lubricate the sleeve with a high grade ball and roller bearing grease every six to twelve months as indicated on the motor.

CHECK AND ADJUST THE CONVEYOR BELT TENSION

1. Manually lift the conveyor belt from the unit's track.
2. Check to ensure there is 4" or less for clearance
3. If adjustment is required at the load end, there are two disc covers for access to take up bearings. Remove covers.
4. With 1 ½" socket, adjust both sides accordingly and reinstall covers.

CHECK THE GFI SENSOR

ELECTRIC SHOCK HAZARD: Only an electrician should perform this test!

1. Turn on power to the washer.
2. Press test button on the Ground Fault Interrupt (GFI) located on back panel.
3. Power to the unit should go off.
4. Press reset.
5. Power to the unit should come back on.
6. Fill out GFI chart on the inside of the electrical box.

If this test fails, contact your Authorized Service Technician

RECOMMENDED SPARE PARTS LIST

Consumable Stock

DESCRIPTION	PART NO.
Printer Paper - 3.25”W x 3” Diameter Single Ply	P0020680
Printer Ribbon, #32434	P0020681
Lustre Stainless Steel Cleaner/Polish (13 oz.)	61301600026
Door Gasket (1 per door)	R0013125
Backup Battery (2/3 AMP, 3V, Lithium)	P0020693

Spare Parts

Below is a list of Recommended Spare Parts. Refer to the Customer Manual for a more complete Spare Parts List. Electrical and piping schematics are also in the Customer Manual.

RECOMMENDED SPARE PARTS

DESCRIPTION	PART NO.
O-ring, automatic self-cleaning debris filter	P0015136
Screen, filter, automatic self-cleaning debris filter	B300232A
Printer Kiosk & Gaming Printer #4700 W/Ribbon 40 Column, 12 Character/Inch, 8 Line/Inch Serial RS-232C, Interface, 9600 Baud Rate	P0020663
Belt, fan system, power exhaust	P0013076

Section 5 Troubleshooting

PROBLEM	PROBABLE CAUSE	CORRECTION
No power or screen is blank.	1. Building's electrical supply disconnect switch (circuit breaker) is off. 2. Primary fuses on transformer blown. 3. Secondary fuse on transformer is blown. 4. GFI is tripped. 5. Control board failed.	1. Set the switch to the on position. 2. Replace fuses. 3. Replace fuse. 4. Check GFI. 5. Replace the control board.
Machine is constantly draining.	1. Control signal off. 2. Drain valve is worn.	1. Use meter to check signal. 2. Rebuild or replace drain valve as necessary.
Machine leaks water into cabinet when it drains water.	House water fill valves faulty.	Check house water fill valves If valves work, but continue to leak, replace valve seals. If valves do not work, replace valves.
Processor does not read door open or sound alarm.	Door switch is damaged.	Replace the door switch.
Pump pressure is higher than normal (30-40psi).	1. Spray jets plugged. 2. Self cleaning screen plugged with debris.	1. Flush out jets. See "CLEAN THE SPRAY JETS AND HEADERS" on page 4. 2. Clean screen. See "INSPECT THE AUTOMATIC SELF-CLEANING DEBRIS FILTER SCREEN AND TANK" on page 3.

PROBLEM	PROBABLE CAUSE	CORRECTION
Pump pressure is lower than normal (20-30psi).	1. Spray jets missing. 2. Header plugs are not in place. 3. Pump seals are worn (check for water under pump). 4. Self cleaning debris filter may be plugged. 5. Pump connection to tank leaking, allowing air into pump.	1. Replace spray jets as necessary 2. Replace as necessary. 3. Replace as necessary. 4. See “INSPECT THE AUTOMATIC SELF-CLEANING DEBRIS FILTER SCREEN AND TANK” on page 3. 5. Replace hose or tighten clamps.
Water is leaking from washer	1. Door(s) not fully closed and secured. 2. Door gasket damaged. 3. Window gasket damaged. 4. Piping is leaking. 5. Header is not installed. 6. Duct work leaking, water running down side of machine.	1. Fully close and secure the door(s). 2. Replace the door gasket. 3. Replace the window gasket. 4. Check piping and valves. Tighten or replace as necessary. 5. Install the header. 6. Repair the duct work.
Cycles do not begin when the start button is pressed.	1. Water level is low. 2. Machine not up to temperature. 3. Cycle parameters not set properly.	1. Inspect and clean lever control probes. 2. Check steam supply. Check utility valves. 3. Check program settings.
Unit calls for water or low water level is displayed frequently.	1. Pre-wash is set to a high flow rate. 2. Header is not installed properly. 3. Final rinse flow rate too low. 4. Wash water make -up set for too high a flow rate. 5. Drain valve is open. 6. Back flush valve is jammed open.	1. Should only spray 8 inches above belt. 2. Check headers. 3. Open throttle valve (Must maintain temperature. May have to increase steam flow). 4. Clean make-up valve and rebalance machine. 5. Close drain valve. 6. Repair valve.

CYLE INTERRUPT CONDITIONS

Resettable

The following conditions stop the wash cycle,
BUT do not interrupt the wash cycle process:

- Wash Fill Timeout
- Wash Temperature Timeout
- Rinse Fill Timeout
- Rinse Temperature Timeout
- Final Rinse Temperature Timeout
- Dryer Temperature Timeout
- PLC Battery Low
- Backflushing pump screens

If any of the above occurs:

- Press ALARM ACK and START on the Control Panel to continue the automatic cycle.

If the condition persists and the CYCLE ABORTED Panel reappears:

- Notify an Authorized Service Technician.

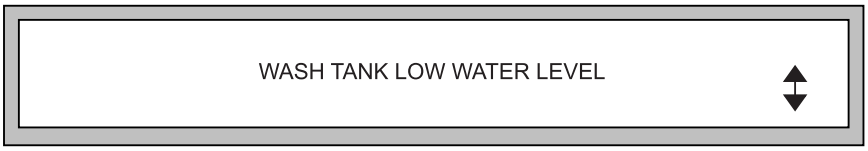
Non-Resettable

The following conditions stop the wash cycle
AND interrupt the wash cycle process:

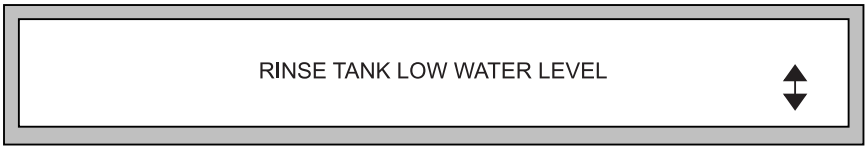
Condition	If this occurs
Pressing ABORT on the Control Panel	1. The initial Control Screen appears. 2. Start a new wash cycle.
Pulling the EMERGENCY STOP cables	1. The initial Control Screen appears. 2. Turn the power OFF and ON to reset the washer. 3. Start a new wash cycle.

Screens Activated by Alarms

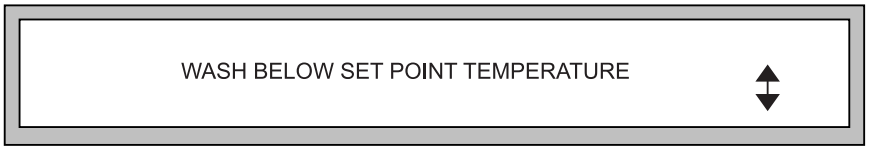
If any of the following messages appear during the cleaning cycle, follow the instructions below the message.



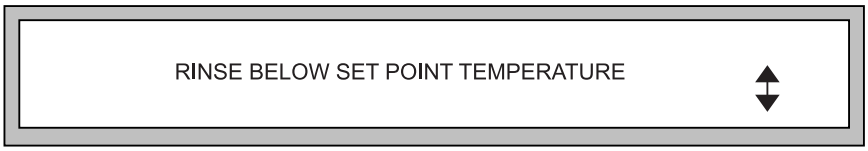
Wash tank automatically refills. If alarm goes off repeatedly, check house water pressure.



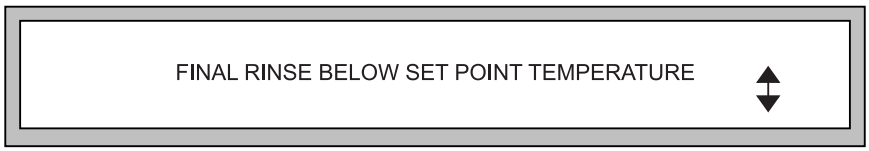
Rinse tank automatically refills. If alarm goes off repeatedly, check house water pressure.



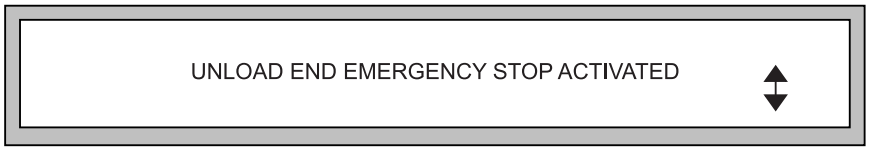
1. Check steam supply.
2. Check steam valve.
3. Check steam trap.
4. Check water pressure for higher pressure than normal.



1. Check steam supply.
2. Check steam valve.
3. Check steam trap.
4. Check water pressure for higher pressure than normal.

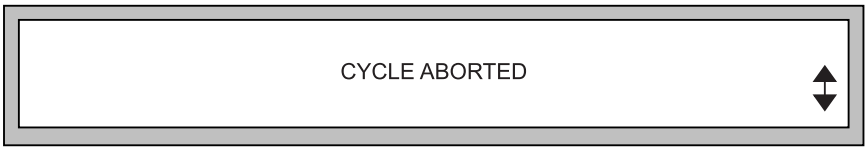


1. Check steam supply.
2. Check steam valve.
3. Check steam trap.
4. Check water pressure for higher pressure than normal.
5. Check water temperature from house.

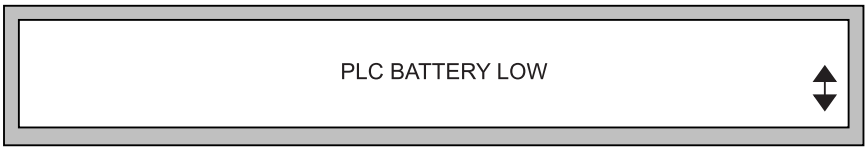


1. Verify there are no emergency conditions at the unload end of the unit.
2. Reset the Emergency Stop cable located at the unload end of the unit.
3. Cycle power.

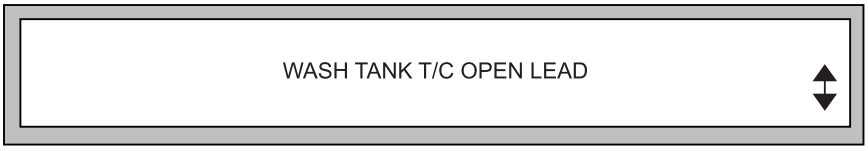
1. Verify there are no emergency conditions at the load end of the unit.
2. Reset the Emergency Stop cable located at the load end of the unit.
3. Cycle power.



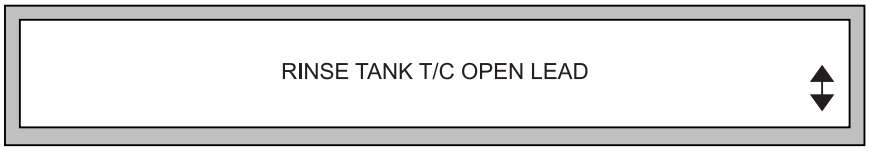
Press “ANSWER ALARM” button.



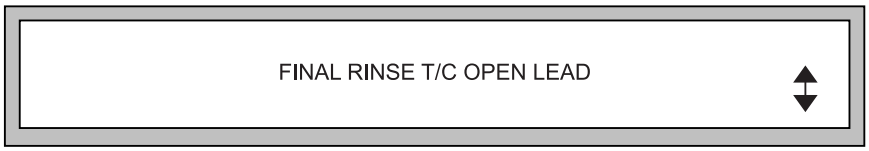
1. Change battery.
2. If second battery goes low, call for service, possible defective power supply.



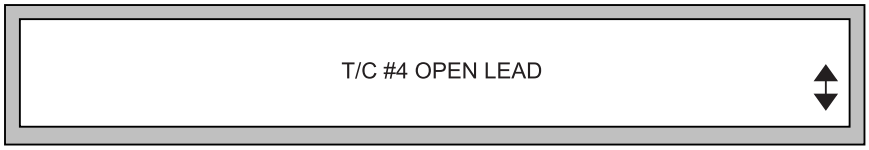
1. Check all connects for the thermocouple from the wash tank.
2. Check probe for open circuit, replace if needed.



1. Check all connections for the thermocouple from the rinse tank.
2. Check probe for open circuit, replace if needed.



1. Check all connections for the thermocouple from the final rinse.
2. Check probe for open circuit, replace if needed.



1. Check all connections for the thermocouple from the dryer.
2. Check probe for open circuit, replace if needed.

1. Ensure that all chamber access doors are closed tightly.
2. Reset Emergency Stop system.

Section 6 Installation Instructions

INTRODUCTION

This section is for convenient customer reference. It summarizes information used for installing the bedding dispenser.

Official agreements, pertinent drawings, and related documents are provided separately to the customer by authorized personnel.

UNCRATING & EQUIPMENT INSPECTION

Before signing the Bill of Lading and accepting the equipment, inspect the outside of the crates for any visible damage. If any damage has occurred, note it on the Bill of Lading.

After accepting the equipment, if any visible damage is apparent notify the carrier's insurance and process a claim. At this point it is good practice to take pictures of the crate to back up the claim if internal damage has occurred.

Move the crate(s) to the general area where the machine will be set in place. Uncrate the outside of the machine and inspect the contents of the equipment. If damage is apparent, take pictures of the areas.

Upon completion of the inspection process, place the machine in the spot where the equipment will be connected to the facility's services. Locate the four (4) support legs located on t he under side of the machine. Using the floor pallet lift, (while the machine is still on the lower skid) raise the machine up four inches and place a 4x4x4 block under each support leg. Dismantle and remove the lower skid from under the machine. Raise the machine up using the pallet lift, remove the 4” blocks and lower the machine on to the floor. Make sure that the location of the equipment has at least a 30" clearance around the machine control panel for general maintenance.

Installation should be performed by Authorized Service Technicians only.

INSTALLATION /ASSEMBLY CHECKLIST

Once your machine has been inspected for damage and properly uncrated, you are now ready to install the equipment. Installation should be performed by Authorized Service Technicians only. The following should be performed before notifying your installation contractor to insure the smooth installation of your equipment.

Equipment Location

- Crates are in the room.
- Clear access is available for installation personnel.
- Lighting and 30 AMP/110 Volt AC power is present within 25 feet of the installation area.
- Heating and Air Conditioning is available in the installation area.
- A Pass-through or Wall opening is correct to supplied room layout and equipment drawings (if applicable).
- On floor mounted units, the floor has been coated/painted under the unit, if applicable.

Utilities

Check to insure that the following utility requirements are as follows:

- Facility steam connection, maximum dynamic pressure, and flow rate is as specified on the certified specification and equipment drawings.
- We recommend the steam supply line have a drip leg and steam trap to prevent debris and excess condensation from entering the equipment steam supply.
- Hot Tap Water supply connection, dynamic pressure, flow rate, and temperature, should meet or exceed the minimum requirement or as specified on the equipment drawings.
- Any special application water is supplied at specified pressure as on the equipment drawings, if applicable.
- A Condensation connection is as specified on the equipment drawings.
- Vent connections and flow rates are available as specified on the equipment drawings.

Electrical

- Verify the electrical supply voltage is as specified on the equipment drawings and as noted on the nameplate on the machine.
- Insure the equipment is provided with a fused disconnect switch located within 10-15 feet from the unit's control panel.

STARTUP

To ensure proper machine startup, follow these steps.

Touch Control Panel (TCP)

1. Ensure that all utilities are properly connected to their respective machine connections and tightened.
2. Verify all incoming power supplied by the customer is as called out on the equipment nameplate.
3. Verify steam supply meets the requirements called out on the equipment drawings.
4. The Touch Control Panel (TCP) will immediately light and perform a self-diagnostic test. Once complete, the system Standby Screen will appear. The machine is now ready for operation.
5. From TCP's standby screen, press the button labeled PUSH TO ACTIVATE CONTROL SYSTEM and the cycle selection screen should appear on your TCP.
6. Select the desired cycle by pressing the designated prompt.
7. Press REVIEW CYCLE and the review phases screen will appear summarizing your cycle characteristics.
8. Press START MODE and the process screen will appear with the words, STANDBY MODE in the upper right hand corner of the screen. The unit will begin to fill with water and heat once the tanks are full.
9. Press START CYCLE to begin automatic operations.

NOTE▶ *If any guarantees are selected, the unit will NOT start until the tank solutions have reached temperature.*

LED Control Panel

1. Ensure that all utilities are properly connected to their respective machine connections and tightened.
2. Verify all incoming power supplied by the customer is as called out on the equipment nameplate.
3. Verify steam supply meets the requirements called out on the equipment drawings.
4. The LCD Display will immediately illuminate and perform a self diagnostic test and make communication with the main processor. Once complete, the system's standby screen will display and the machine is ready for operation.
5. From the LCD's standby screen, press the button labeled SELECT CYCLE and the cycle selection screen should appear on your LCD.
6. Select the desired cycle by pressing the designated prompt.
7. Press REVIEW CYCLE. The review phases screen will appear, summarizing your cycle characteristics
8. Wait for all red indicator lights at the top left of the LCD panel to go out, This will be when all tanks are full and up to proper temperature.
9. Press START CYCLE to begin automatic operations.

If any red lights are lit when the START button is pressed, the machine will not start.

Electro-Mechanical Controls

1. Ensure that all utilities are properly connected to their respective machine connections and tightened.
2. Verify all incoming power supplied by the customer is as called out on the equipment nameplate.
3. Verify steam supply meets the requirements called out on the equipment drawings.
4. Turn main disconnect on service side of panel to the “on” position.
5. To start the machine, turn the power switch located at the top of the control panel to the ON position.
6. Temperature controllers will immediately perform a self diagnostic test. Once complete, the machine will fill and heat up to running programmed temperatures. Once these phases are completed, the green light **(machine ready for operation)** will light.
7. To shut down machine, depress STOP button. This will stop all functions of the automatic operation except for automatic level control and temperature control.

CHECK-OUT PROCEDURE

Authorized Service Technicians will have the Installation Checkout Sheet for the 2200 Series Tunnel, Cage, and Utensil Washer. The Service Technician will verify the unit is operating correctly before leaving the installation site.

TECHNICAL DATA

SERVICE REQUIREMENTS

Utilities and services are furnished by others in accordance with the official drawings for your unit. The utilities are to be supplied with manual shut off valves, electrical services are to be supplied with fused disconnect switches, and all exhaust ducts are to be supplied with manual dampers. For utility requirements refer to the certified specification document .

Section 7 Options

INTRODUCTION

The 2200 Series offers numerous options to meet each customer's specific needs. This chapter lists the most commonly selected options. Your washer may not have all of the options listed, and could have other specific options. For the options selected with your washer, please refer to your Customer Manual.

MOST COMMON OPTIONS

Right or Left Handed Service

The unit is constructed with the service side on either the left or right side of the unit, relative to the Load End.

Wash and Rinse Treatment Temperature Guarantee

DESCRIPTION

Allows the user to program the unit not to allow any product to pass through the washer unless wash and/or rinse chambers are up to programmed temperature. If the temperature drops below set point, the conveyor will stop and sound the audible and visible alert indicating the ow temperature condition.

USER CONTROL

Program the desired temperature into the user program and turn on the guarantee in the desired phase(s).

MAINTENANCE REQUIRED

Clean all thermo-couples for more accurate readings.

Final Rinse Temperature Guarantee

DESCRIPTION

Allows the user to program the unit not to allow any product to pass through the washer unless the final rinse chamber is up to programmed temperature. If the temperature drops below set point, the conveyor will stop and soundan audible and visible alert indicating the low temperature condition.

USER CONTROL

Program the desired temperature into the user program and turn on the guarantee in the final rinse phase.

MAINTENANCE REQUIRED

Clean all thermocouples for more accurate readings.

Controls

A unit typically has one of three types of controls: touch control panel (TCP), LED controller, or electro-mechanical.

TOUCH CONTROL PANEL (TCP)

A solid state microcomputer control system monitors and automatically controls all process operations and functions. Cycle phase times and temperatures, and other key process parameters are programmable and may be locked in by supervision. The twelve-cycle menu of treatment processes may be programmed and retained to permit operating personnel to accommodate a wide variety of load and processing requirements. Cycle programming may be controlled by a supervisory access code to ensure process integrity. Each cycle program may be reviewed and printed on demand.

NOTE

The optional Strip Chart Printer must be selected to have this feature.

Programming may be in standard AM/PM or military time, Fahrenheit or Centigrade temperature. Times and temperature are expressed in minutes/seconds and tenth of a degree increments respectively. An internal battery backs up all cycle memory.

A highly visible color touch panel screen displays cycle program data on demand and real time in process cycle performance. All cycle deviations are alarmed both visually and audibly, recorded and must be acknowledge by the user.

A built-in service diagnostic program, accessible by service access code, is included and displayed to permit system calibration and verification of satisfactory component operation. Service access to the control panel is from the front of the control terminal to permit further ease of maintenance.

LED CONTROLLER

A solid state microcomputer control system monitors and automatically controls all process operations and functions. Cycle phase time and temperatures, and other key process parameters are programmable and can be locked in by supervision. The cycle menu of treatment processes can be programmed and retained to permit operating personnel to accommodate a wide variety of load and processing requirements. Cycle programming can be controlled by a supervisory access code to insure process integrity. Each cycle program can be reviewed and printed on demand.

NOTE

The optional Strip Chart Printer must be selected to have this feature.

Programming can be in standard AM/PM or military time, Fahrenheit or Centigrade temperature. Times and temperatures are expressed in minutes/seconds and tenth of a degree increments respectively. An internal battery

backs up all cycle memory and permits completion of a cycle upon restoration of power after a power disruption.

A highly visible two line LED display screen displays cycle program data on demand and real time in process cycle performance. All cycle deviations are alarmed both visually and audibly, recorded and must be acknowledged by the user.

ELECTRO-MECHANICAL (cannot have a printer)

A solid state timer based control system monitors and automatically controls all process operations and functions. Agent wash and recirculated rinse temperatures, and other key process parameters are user adjustable. In process cycle performance is monitored and indicated by lights on the user control panel. Service access to the control panel is from front of the control terminal to permit ease of maintenance.

RS232 Data Computer Port

An RS232 port is provided to permit the capability to download cycle real time performance data to a remote computer terminal. Custom software may be provided to accommodate specific applications.

RS485 Data Computer Port

An RS485 port is provided to permit the capability to download cycle real time performance data to a remote computer terminal. Custom software may be provided to accommodate specific applications.

Bedding Dispenser Controls

The tunnel washer control system is provided with the capability to monitor an automatic bedding dispenser located at the discharge end of the washer.

Bedding Dump Station Controls

The tunnel washer control system is interwired with an automatic inline bedding dumping station located at the load end of the washer.

Printer

An integral strip chart printer, with paper take-up, is provided to record all cycle program and in process performance data. Each cycle program, including time and temperature set points, may be printed on demand. In-process cycle data is automatically printed to provide a chronological time/temperature profile of actual cycle performance.

DESCRIPTION

A printer, with paper take-up, records all cycle programs and in process performance data. Each cycle program, including time and temperature set points, may be printed on demand. In-process cycle data is automatically printed to provide a chronological time/temperature profile of actual cycle performance.

USER CONTROLS

Figure 7–1. PRINT CYCLE

When pressed, this will cause the current program to be printed out.

Figure 7–2. EVENT PRINT ON

When activated (LED on or Green Color), cycle statistics are printed out automatically during the cycle.

MAINTENANCE REQUIRED

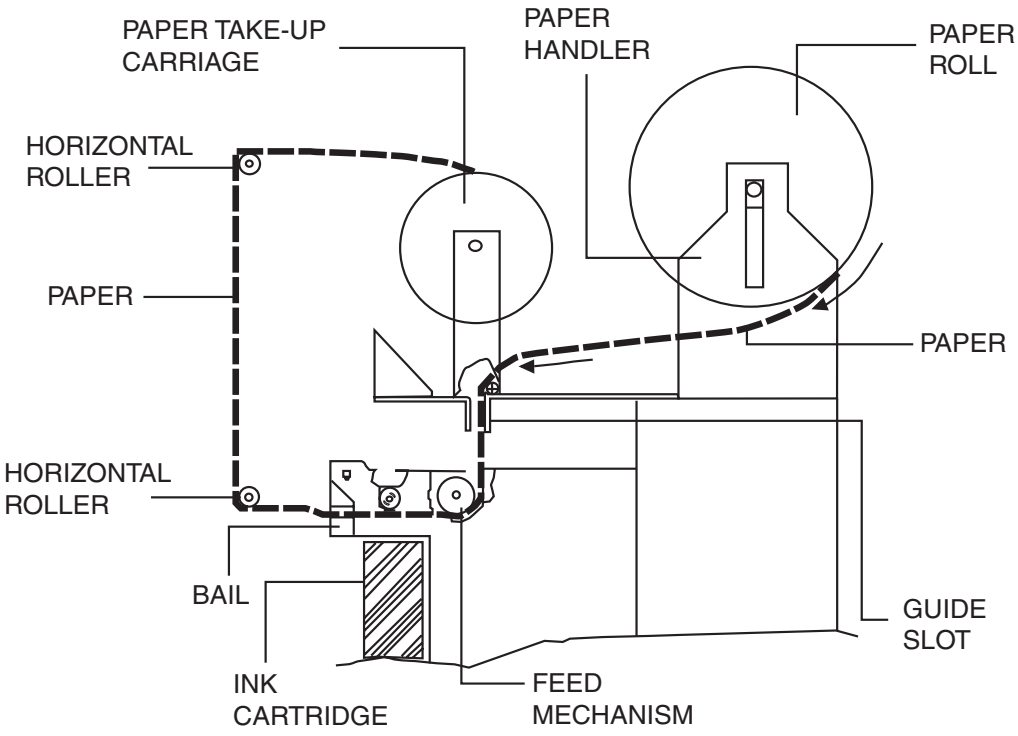
Change the paper roll as needed. (See LOADING PAPER.)

Replace spent Ink cartridges with new cartridges as needed (see INK CARTRIDGE LOADING on page 7–6).

LOADING PAPER

1. Turn off power to the unit.
2. Place the paper roll in the paper handler (Paper roll must have rolling pin at its center).
3. Carefully direct the single-ply paper, from the paper roll, down into the guide slot until the paper stops against the feed mechanism. See Figure 7–3.

Figure 7–3. LOADING PAPER



4. The paper is now ready to be advanced automatically through the rest of the system. To do this, first turn the power on.
5. Guide the paper through the bail slot up and around the two horizontal rollers and attach the leading edge to the clip on the paper take-up carriage.
6. Advance the paper take-up carriage by hand until the paper is taut.
7. The paper is now loaded.

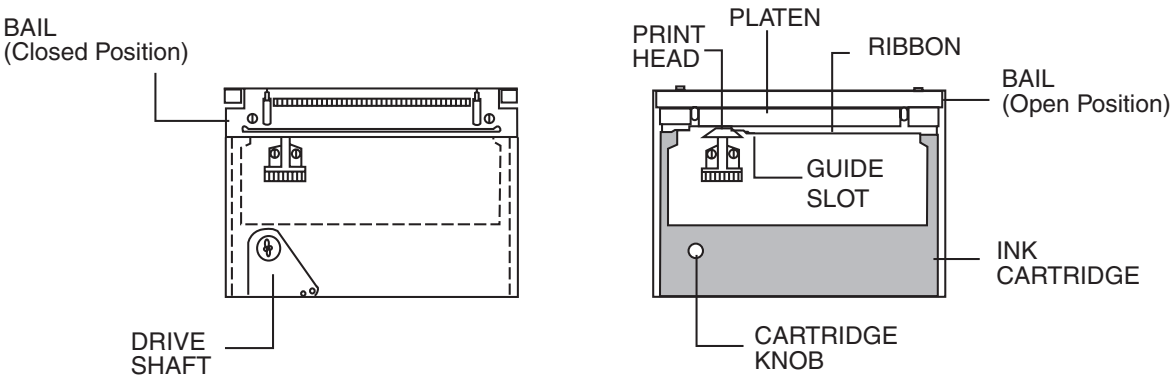
INK CARTRIDGE LOADING

1. Turn power OFF. If there is a used ink cartridge already loaded, remove it by opening the bail and pulling the ink cartridge directly over the drive shaft.
2. Before inserting the new ink cartridge, turn the cartridge knob counterclockwise until ribbon is taut.
3. Open the bail. Carefully mount the ink cartridge onto the drive shaft, keeping the ribbon between the plate and the print head.

NOTE

You should hear the ink cartridge snap into place. See Figure 7–4.

Figure 7–4. INK CARTRIDGE LOADING



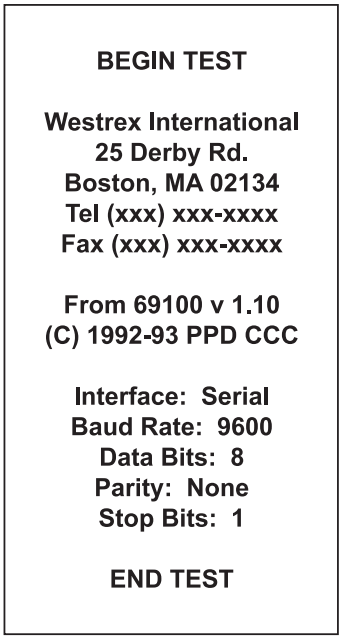
4. Thread the ribbon through the guide slot. Before closing the bail, turn the cartridge knob to make sure the ribbon is still taut.
5. Close the bail. The ink cartridge is now loaded.

SELF-TEST PRINTOUT

1. Be sure that the ink cartridge and paper have been loaded.
2. Turn power OFF.
3. Press and hold the feed switch.
4. Turn power ON, holding the feed switch until the printer starts printing.

5. Release the feed switch. The self-test prints and should look similar to Figure 7–5.

Figure 7–5. PRINTER SELF-TEST



PRINTER INFORMATION

Printer

See “Spare Parts” on page 4–6.

Printer Paper and Printer Ribbon

See “Consumable Stock” on page 4–6.

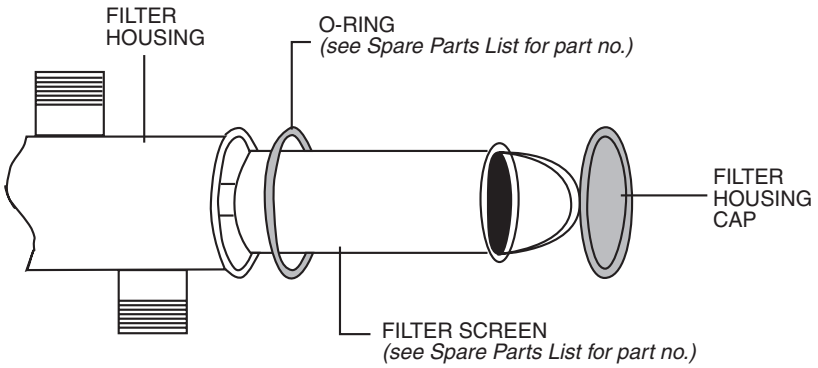
Stainless Steel Treatment Components

All components including valves, pump, and piping that come in contact with the recirculating treatment solution are 304 stainless steel to provide system life and durability.

Automatic Self Cleaning Debris Filter

The output of the wash pump is provided with a self cleaning debris filter to prevent plugged spray jets. This filter is interpiped and interwired with the control system to filter the recirculated wash solution and periodically to backflush debris to the drain. The filter screen may be accessed without the use of tools.

Figure 7–6. DEBRIS FILTER SCREEN



Automatic Drain System

DESCRIPTION

Drains the agent wash and recirculated rinse tanks automatically at the end of the processing period and drains and refills the tanks periodically during the process period according to a programmable time schedule.

USER CONTROLS

If a drain is required **with no descale**, use Manual Drain. The unit opens drain valves and injects cold water into the drain line to cool off the discharge to a non-monitored 140 degrees. At the end of the drain, turn the unit power OFF.

If a drain is required **with no drain cool down**, turn ON the AUTO DRAIN switch. Wait for the drain valves to open, and turn the unit power OFF. **(This leaves the drain valves open and the cold water off.)**

Wash Interior Cleaning and Descaling System

DESCRIPTION

Provided in the interior of each tank are jets to wash the walls of the tank to remove debris build up. The control system when activated will automatically drain each tank, refill the tanks with fresh water and a descaling agent, activate the belt and pumps for user programmable period of time, drain and refill the tanks with fresh water, and recirculate the water to remove residual descaling agent, automatically draining and flushing each tank. This system reduces or eliminates the need to clean the tanks manually.

USER CONTROLS

To activate the system:

1. Press DESCALE.
2. Unit automatically drains each tank.
3. Tanks refill with fresh water and descaling agent.
4. After tanks are full, the wash and rinse pump along with the drive turn on for a programmed period of time.
5. Tanks drain and refill with fresh water.
6. Pumps turn on to recirculate the water to remove residual descaling agent.
7. Once the fresh water has run for the programmed time, the pumps and drive turn off and the drain valves open.

To leave drain valves open for an extended period of time, turn OFF the power to the unit. This stops the flow of cold water into the drain.

DO NOT TURN OFF THE POWER BEFORE THE TANKS ARE EMPTY!

Acid Treatment System

The acid treatment system consists of a stainless steel tank and pump, fixed upper and lower jet spray headers in the treatment zone and inter-connecting valves and piping. Agent injection ports are provided for connection to optimal agent injection/control systems.

The recirculating tank is equipped with an automatic level control, safety overflow piping, manual drain valve, and stainless steel steam coil heaters to heat the recirculated treatment solutions. The steam coils are complete with condensate return, steam traps, and strainers.

The recirculated treatment solution is filtered through a basket type filter screen. An optional self-cleaning debris filter may be provided at the pump output to prevent the possibility of plugged spray jets.

Non-Recirculated Final Pure Water Rinse

Hot pure water from house supply is heated by a stainless steel steam heat exchanger and directed through a stainless steel, final rinse, jet spray header under house supply pressure and retained in the rinse tank for the recirculated rinse and pre-wash. Final pure water rinse temperature is manually adjustable to 195ºF. Other pure water final rinse options are available to accommodate other pure water supply conditions.

Water Pressure Reducing Station

Provided in the inlet of the house tap water line is a pressure reducing station that stabilizes the incoming water pressure, delivering an even filling rate to the unit.

House Tap Water Temperature Booster

An instantaneous steam-to-water heat exchanger is provided to raise the house tap water supply temperature by 80ºF.

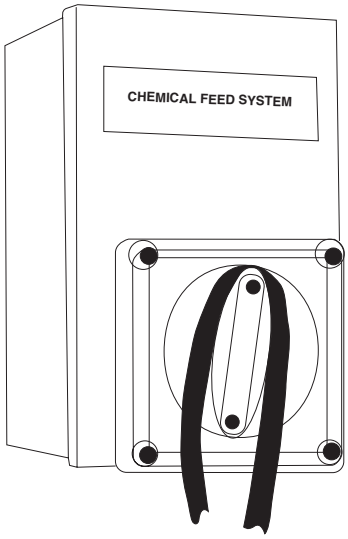
Automatic Agent Injection System (Optional)

A monitored proportional type injection system is provided to automatically inject user supplied liquid cleaning agent into the tank. The treatment solutions concentrations is sensed with a probe and a proportional amount of agent is injected to attain and maintain the selected agent concentration.

At the start of the Wash phase of a cycle, the chemical dispenser automatically pumps liquid detergent into the hot water supply held in the wash tank. The dispenser operates for the preset period of time it takes to deliver the correct amount of detergent, after which it shuts off automatically.

Dispenser priming and timing is set by the Authorized Service Technician.

Figure 7–7. LIQUID SUPPLY DISPENSER



BEFORE ROUTINE OPERATION

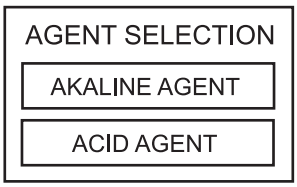
Check that:

1. A sufficient supply of liquid is available for the dispenser.
2. The end of the dispenser's inlet tubing is properly inserted into the correct liquid supply container.

USER CONTROLS

The user must select the chemical to be used for the program cycle.

Figure 7–8. SELECT THE CHEMICAL



During programming mode, select the agent to be injected during the wash 1 and 2 phase.

LED controller only: Use the TOGGLE button to change from Acid to Alkaline.

Figure 7–9. TOGGLE BUTTON BEFORE

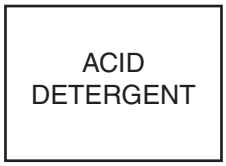


Figure 7–10. TOGGLE BUTTON AFTER

NOTE

Concentration must be tested on a monthly basis to ensure proper amount of chemical is being injected into Wash 1 and Wash 2 tanks.

Manual mode causes the Alkaline detergent pump to be activated for a preset period of time.

PUMP ON/OFF INDICATOR

Red light that comes on when the pump is energized (automatically or manually).

PUMP

Draws liquid from the supply source and feeds it to the wash tank.

INLET TUBING

Carries liquid from the supply source to the pump.

OUTLET TUBING

Carries liquid from the pump to the wash tank.

Automatic Agent Injection System – Time Based

A non-monitored, time based, volumetric type injection system is provided to automatically meter user supplied liquid cleaning agent into the tank.

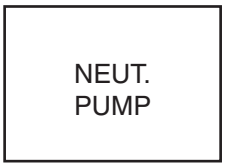
Agent Neutralization System Non-Monitored

DESCRIPTION

Time based neutralization of highly acidic or alkaline treatment solutions to a neutral pH before discharge to drain, conforming to plumbing code requirements.

USER CONTROLS

Figure 7–11. AGENT NEUTRALIZATION SYSTEM BUTTON



Manual mode causes the Acid Neutralizer pump to be activated for a preset period of time.

MAINTENANCE REQUIRED

None

NOTE

*On units providing only Dry Contacts, the load placed on the contacts must be **no greater than ½ amp.***

pH Monitored

TREATMENT SOLUTION pH NEUTRALIZATION SYSTEM – TIME BASED

A non-monitored, time based, volumetric type injection system is provided to automatically meter user supplied neutralization agent into the tank or optional separate tank, to neutralize highly acidic or alkaline solutions to a neutral pH before discharge to drain to conform to plumbing code requirements.

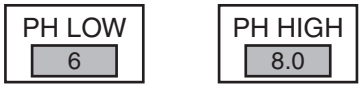
TREATMENT SOLUTION pH NEUTRALIZATION SYSTEM – MONITORED

A monitored, proportional type system to automatically inject user supplied neutralization agent into the tank to neutralize highly acidic or alkaline solutions to a neutral pH before discharge to drain to conform to plumbing code requirements. The treatment solution pH is sensed with a probe and a neutralizing agent is injected to achieve a neutral pH.

USER CONTROLS

the range for the discharge of solutions may be adjustable from 0.0–14.0 using the following controls: PH HIGH which sets the upper limit for discharge to drain, and PH LOW which sets the lower limit for discharge to drain.

Figure 7–12. pH MONITORED



MAINTENANCE REQUIRED

Every six months, calibrate the pH transmitter and probe.

To calibrate the pH transmitter and probe:

1. pH CAL adjustment is made with a buffer solution of 7 pH. Adjust the CAL potentiometer until the display reads 7.00.
2. SLOPE adjustment is made with a buffer solution of 4 pH. Adjust SLOPE for a reading of 4.00. Continue to adjust each potentiometer alternately using the specified buffer solution until no adjustment is required.

Mechanical Hold Down System

A mechanical hold down unit that can be raised or lowered to accommodate the processing load. The unit is driven by a 1/2 HP motor.

Six Foot Recirculated Air Dryer Section

DESCRIPTION

An insulated steel six-foot dryer section to recirculated 210ºF air to dry the load. The system consists of a steam to air heat exchanger, a single 5 HP blower capable of providing a 1600 CFM air flow and a stainless steel plenum system. Moisture is eliminated by exhausting a portion of the recirculated air to the facility exhaust system. Plastic cages are delivered at the unload end 95% dry. All air ducting is stainless steel and includes required manual dampers.

USER CONTROLS

Dryer must be set to “on” in the program cycle.

MAINTENANCE REQUIRED

All valves and steam trap must be kept in clean working order. Inspect valves and traps any time temperature change is noticed.

Seven Foot 99% Plastic Cage Dryer

DESCRIPTION

An insulated stainless steel seven-foot dryer section to recirculate 210ºF air to dry the load. The system consists of steam to air heat exchangers, dual 5 HP blowers capable of providing 3200 CFM air flow and a stainless steel plenum system. Moisture is eliminated by exhausting a portion of the recirculated air to the facility exhaust system. The conveyor belt is separated from the wash compartment to remove the excess water remaining on the plastic cages existing the recirculated dryer. This system delivers the plastic cages 99% dry at the discharge of the dryer, permitting filling of the cage immediately.

USER CONTROLS

Dryer must be set to ON in the program cycle.

MAINTENANCE

All valves and steam trap must be kept in clean working order. Inspect valves and traps any time temperature change is noticed.

Ten Foot Recirculated Air Dryer Section

DESCRIPTION

An insulated steel ten-foot long dryer section to recirculate 210ºF air to dry the load. The system consists of steam to air heat exchangers, dual 5 HP blowers capable of providing a 3200 CFM air flow and a stainless steel plenum system. Moisture is eliminated by exhausting a portion of the recirculated air to the facility exhaust system. Plastic cages are delivered at the unload end 95% dry. All air ducting is stainless steel and includes required manual dampers.

USER CONTROLS

Dryer must be set to ON in the program cycle.

MAINTENANCE

All valves and steam trap must be kept in clean working order. Inspect valves and traps any time temperature change is noticed.

Load/Unload Conveyor

All stainless steel, roller type, gravity conveyor at the output end of the washer to facility unloading. Conveyor rollers are 2” diameter on 3” centers with corrosion free bearings and shafts. Discharge conveyors are available in three different lengths: four-foot, six-foot, and eight-foot.

Power Discharge Unload Conveyor

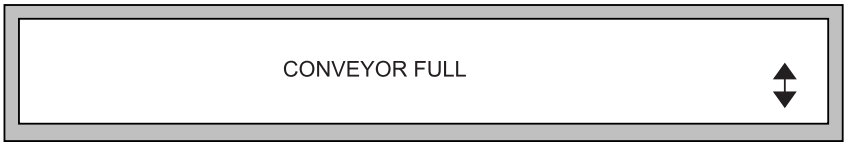
The conveyor is provided with an external drive system that powers the stainless steel conveyor rollers. The item when placed on the conveyor will automatically move into or out of the washer.

Automatic Conveyor Stop

DESCRIPTION

A photoelectric switch is located at the end of the discharge conveyor to automatically stop the conveyor drive when an item reaches the end of the conveyor. A second photo eye may be located at the end of a bedding dispenser. The user can program the cycle to sop at the end of the washer or dispenser. A stopped conveyor condition is audibly and visually annunciated to the user on the control screen.

Figure 7–13.



USER CONTROLS

Program may be changed to read the photo eye at end of washer. The photo eye at the unload end of a bedding dispenser will always remain on.

Figure 7–14. PHOTO EYE INDICATOR

MAINTENANCE REQUIRED

Sensory lenses should be periodically wiped clean with a soft cloth to remove any dust or debris that may have accumulated.

Exhaust Plenum System

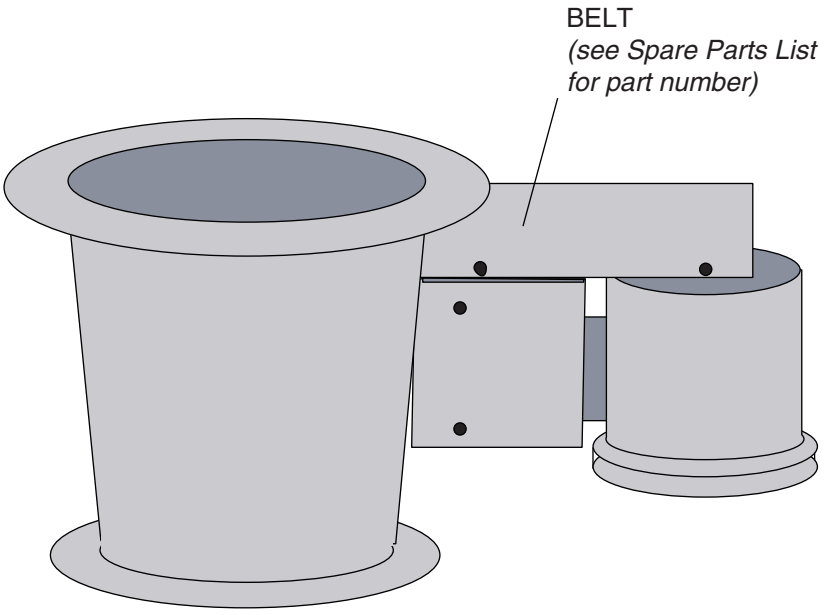
The unit is provided with a stainless steel plenum for a single point exhaust connection. Plenum includes manual dampers in each of the unit exhaust lines.

Power Exhaust

DESCRIPTION

The unit is provided with a stainless steel fan to be mounted on the exhaust plenum system. The fan is interwired with an automatic control system to exhaust residual vapor and hot moist air from the chamber. The fan system is provided complete with a 3 phase, 60 Hz motor and magnetic starter.

Figure 7–15. FAN SYSTEM



USER CONTROLS

None

MAINTENANCE REQUIRED

ITEM	INTERVAL	MATERIAL	QUANTITY
Grease belt drive fan bearings	Daily	Lithium #2 grease	One to two strokes of grease gun.
Lubricate motor bearings	Six Months	Lithium #2 grease	One to two strokes of grease gun.

NOTE

Do not use a pneumatic pressure greasing system. It fills the bearing chamber completely.

Drain Discharge Cool-Down Injection System – Non-Monitored

DESCRIPTION

Cold tap water is automatically injected into the drain discharge to lower the discharge temperature before entering into the building's drain system.

When washer is running, the cold water is injected at a restricted rate to match the normal rate of water used in the pre-wash. If the washer is equipped with “AUTO DRAIN” options, the restricted cold water valve will close and a non-restricted valve will open allowing the proper amount of cold water to be injected into the drain lowering the drain water temperature.

USER CONTROLS

None

MAINTENANCE REQUIRED

The drain discharge temperature must be checked with a calibrated thermometer to ensure the proper amount of cold water is being injected into the drain.

Steam and Water Pressure Gauges

Provided on the incoming steam and water line are pressure gauges to monitor the facility utilities.

Chilled Water Vapor Removal Condenser

A chilled water condenser is provided to reduce excessive vapor and cool the exhaust air prior to entering the building exhaust system. The exhaust vapor is reduced. This option increases the overall height of the washer.

Barrier Trim Flange System

RECESSING THROUGH ONE WALL

Stainless steel panels are provided to fully enclose the recessed end of the unit from wall to wall and floor to finished ceiling

RECESSING THROUGH TWO WALLS

Stainless steel panels are provided to fully enclose the entry and exit ends of the unit from wall to wall and from floor to finished ceiling.

M.O.D.E.M. (MTP Online Diagnostics, Evaluation, and Monitoring) System

DESCRIPTION

A modem is provided during the warranty period for online service diagnostics, evaluations, and software upgrades. The M.O.D.E.M. System allows factory software engineering personnel immediate access to the unit's control system program. Factory service personnel will then be able to troubleshoot, identify system malfunctions, and recommend repair requirements to local maintenance personnel within minutes of a malfunction. The M.O.D.E.M. System reduces expensive on site Repair Technician costs allowing the customer to perform maintenance repairs internally, and minimize lost productivity due to possible equipment downtime.

USER CONTROLS

None

MAINTENANCE REQUIRED

A dedicated analog phone line must be run from the control panel to ensure proper performance of M.O.D.E.M.

Seismic

Design is in accordance with seismic stress calculations—Title 25 (Division T-17 of Part 6) of the California Administration Code.

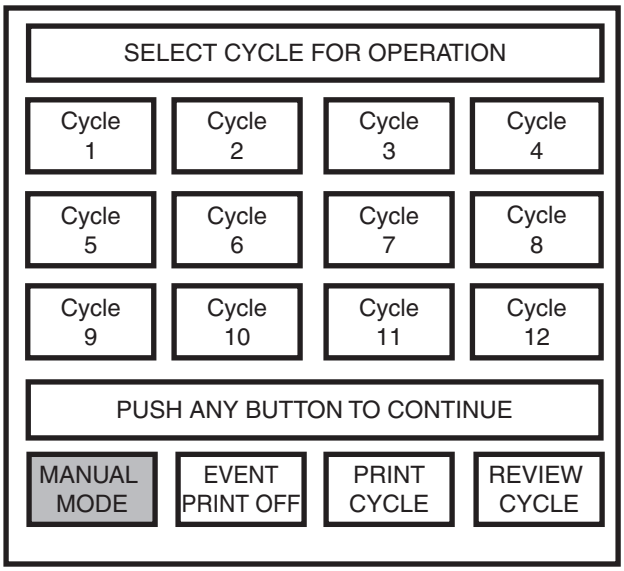
Appendix A Manual Screens

INTRODUCTION

The Touch Control Panel is a multi-cycle color graphic microcomputer control system. A total of twelve treatment cycles can be programmed and stored into memory. Manual mode is for those unique cycles that need to be run on occasion and are not part of the normal daily routine. It is a cycle that is programmed at the beginning, and is not maintained in memory after the cycle has completed.

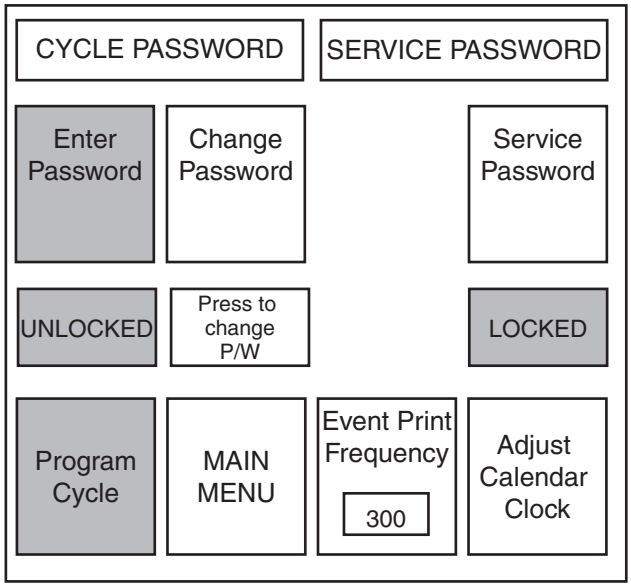
The following screens are for the Touch Control Panel only. For LED Controller Manual Screens, see page 2–20.

PROGRAMMING A CYCLE USING MANUAL MODE

WHEN THIS SCREEN APPEARS	FOLLOW THESE STEPS
CYCLE SELECTION SCREEN 	Select MANUAL MODE.

WHEN THIS SCREEN APPEARS

CYCLE ACCESS SCREEN

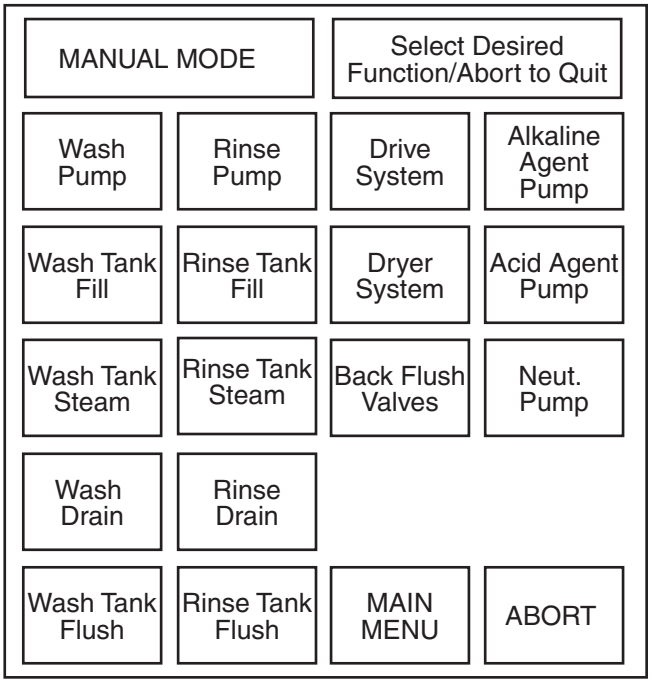


FOLLOW THESE STEPS

1. Press ENTER PASSWORD.
2. Unlock the system:
   a. Type in correct password “12345”.
   b. Press ENTER.
   c. Press DONE.
3. Select PROGRAM CYCLE.

WHEN THIS SCREEN APPEARS

MANUAL MODE SCREEN 1

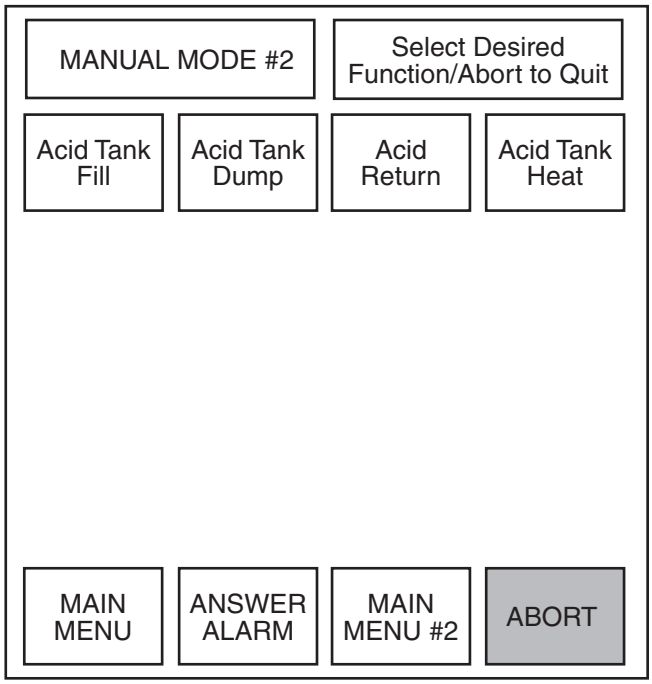


FOLLOW THESE STEPS

- Press any prompt to activate selected components.
- Press the prompt again to stop the selected component, or press ABORT to stop all components activated.
- All safeties are intact in the manual mode, The wash and rinse pumps do not operate if there is not enough water in tank.
- The tank fill does not activate if the tank is full.
- The tank fill stops when the tank is full.
- Drains remain open until the prompt is pressed again or the screen is changed.
- Wash and rinse tank steam shuts off when the programmed temperature is reached.
- When the rinse pump is activated, the final rinse is activated.

WHEN THIS SCREEN APPEARS

MANUAL MODE SCREEN 2



FOLLOW THESE STEPS

- Press any prompt to activate a selected component.
- Press the prompt again to stop a selected component or press ABORT to stop all activated components.
- All safeties are intact in the manual mode. The wash or rinse pumps do not operate if there is not enough water in tank.
- The tank fill does not activate if the tank is full.
- The tank fill stops when the tank is full.
- Drains remain open until the prompt is pressed again or the screen is changed.
- Wash and rinse tank steam shuts off when the programmed temperature is reached.
- When the rinse pump is activated, the final rinse is activated.

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